

630.5
TL
V.15

6

115/20
"TROPICAL LIFE" SUPPLEMENT

JULY, 1919.



The Production and Refining of Edible Oils

By B. P. FLOCKTON,
M.I. MECH. E.

OIL MILL ENGINEER,

MANLOVE, ALLIOTT & Co., LTD.,
NOTTINGHAM,
ENGLAND.

The Production and Refining of Edible Oils.*

UNTIL the latter part of 1914 the production of edible oils was an industry which had received very little attention from British manufacturers; the trade was practically a Continental one, more particularly confined to Holland, Germany, Austria and Belgium. At that date there were not more than three factories producing oil for edible purposes in this country, although several were treating edible oil seeds in a perfunctory manner, the oil thus obtained being used for the better quality soaps.

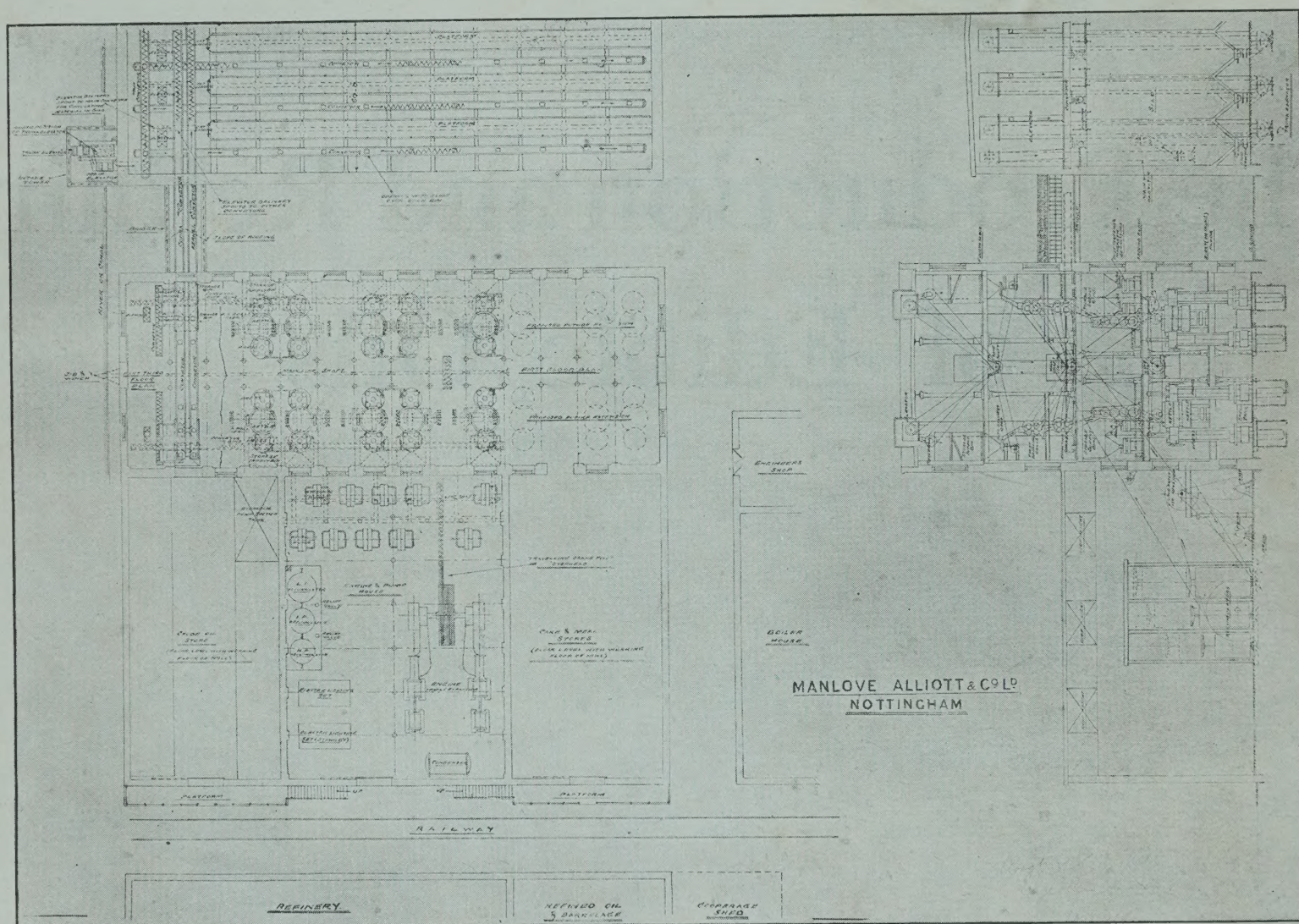
The shortage of margarine and edible fats created a demand with which British manufacturers were ill-equipped to cope, although strenuous efforts were made to make good the shortage due to the principal sources of supply being closed, but in the majority of cases the machinery available had to be adapted to meet

First quality oils are produced by submitting the various seeds and nuts to hydraulic pressure, the seed being first suitably prepared.

Whilst the by-products have a considerable value the oil is the first essential and naturally the factory must be designed with a view to obtaining the highest possible yield of oil at the lowest manufacturing cost, and consequently it is of the utmost importance that the preparatory machinery should be capable of so treating the seed as to allow of this being done.

It is therefore necessary that the seed should be thoroughly broken and rolled in order that each oil cell should be bruised and so left in such a condition as to yield its contents under pressure.

Ordinary rolling is totally inadequate, the reduction must be gradual and done in such a manner as to ensure that the resulting meal is not granular but flaked.



D. 10434.—Design of Factory for Crushing and Pressing Edible Oil Seeds.

the conditions and was quite unfitted for economical working.

At the present date many up-to-date plants are being installed, and there is no doubt that in the near future this country will be quite independent of any outside source of supply, and seeing that 90 per cent. of edible oil seeds are grown in British Dependencies there is no reason why this most important industry should not be one which, if properly controlled, should provide a field for export.

It is my intention this evening to explain in detail, so far as time allows, the necessary equipment for an up-to-date factory, together with a brief explanation of its working.

* Paper read before the Society of Chemical Industry, Manchester, on May 2nd, 1919, by Mr. B. P. Flockton, M. I. Mech. E.

A second essential is that the meal when correctly prepared should be heated to a high temperature and moistened to ensure the flow of the oil, otherwise the percentage of oil left in the meal after pressing will be found to be high even though abnormally high pressure may have been applied for an unnecessary length of time.

The slide illustrated (D. 10434) shows a factory equipped for the treatment of 1,000 tons of edible seeds per week of 120 hours with provision for an extension to 1,600 tons.

The principal oil seeds and nuts from which edible oil is produced are Palm Kernels, Ground-nuts (Arachide) and Copra, whilst an excellent oil can also be obtained from Sesame and Cotton-seed, though the latter is not recognized as edible in the ordinary sense,

inasmuch as it requires considerably more treatment than the former, and even when thus treated is not admitted to the list of first-grade oils.

The oil mill shown is built upon the banks of a river or canal, the seed arriving at the factory by steamer or barge, from which it is unloaded into silos by means of trunk elevators and conveyors.

The silo is built for a total storage of 4,000-5,000 tons, and it is therefore necessary to provide for the occasional turning over of the seed to prevent undue heating.

The seed is conveyed to the oil mill by elevators and conveyers, where it is first cleaned and passed over magnetic separators in order to remove dust and any pieces of iron which would cause damage to the machinery. From the magnetic separators the seed is raised by elevators to storage bins fixed over the reduction rolls, and which are constructed to hold eight or ten hours' supply; these bins are fitted with automatic feed device which ensures a regular and even supply of seed to the rolls.

The *reduction* of the seed varies in accordance with the class of nut or seed being treated. Copra being in pieces of considerable size requires considerably more preliminary treatment than palm kernels or ground nuts.

The mill shown being for the production of oil from copra and palm kernels is provided with two sets of rolls, each being fitted with two pairs of grooved rolls, the flutes being very deep on the first pair and becoming finer on each succeeding pair of rolls.

The broken meal is now ready for final reduction, which is done by means of five high rolls of large size which run face to face and thus subject the meal to an increasing pressure as it passes from the upper to the lower rolls until it is finally discharged to an elevator which delivers it to the heating kettle.

It will be noted that each pair of presses is provided with two kettles superimposed; the meal is delivered

meal being gradually raised to a temperature of 200°-210° Fahr.

The lower kettle is fitted with a strickling box or container which is supported upon a plate alongside the press and operated either by hand or a hydraulic ram.

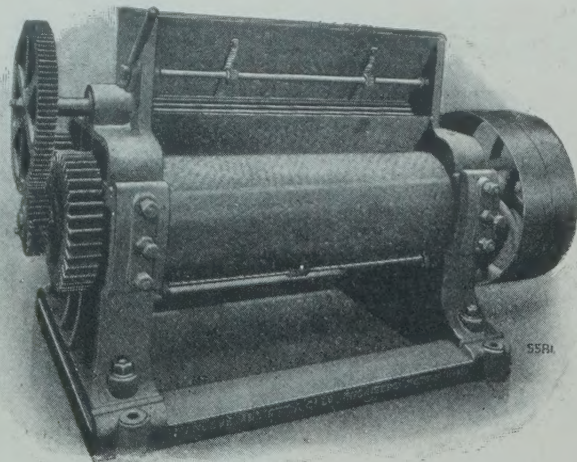


FIG. 5581.—Reduction Rolls for Ground Nuts.

The meal is placed in the press in layers, a steel plate being placed between each measure of meal and the whole mass is then subjected to hydraulic pressure equal to 3 tons per square inch on the cake. The oil flows freely and after being under pressure about half an hour the cakes are removed from the press and the operation repeated.

I now propose to explain the construction of the various machines in detail, and would draw your attention to the next slide illustrating the reduction rolls. (Fig. 5582.)

These rolls are for the first reduction of copra, and are constructed with two pairs of chilled cast-iron rolls, each pair being independently driven.

In the reduction of copra it is essential that it should not be simply broken but rather torn apart, and for this purpose the rolls run at different speeds.

Ground nuts on the contrary *must* be broken, and being of a much softer nature than copra one pair of rolls only are required (fig. 5581), and these run at equal speeds.

Palm kernels are often broken and reduced by triple rolls (fig. 7323), which are a combination of both methods. The kernels are particularly hard and consequently the two upper pairs of rolls are constructed to run at varying speeds in order that the kernels may first be broken and afterwards rolled by the bottom pair of rolls, which run at equal speeds.

The final reduction rolls (fig. 7338) are of the Anglo-American type, but specially designed for the treatment of seeds containing a high percentage of oil. The rolls are of chilled cast iron, 24 in. diameter, and are ground dead true; the three upper rolls are grooved, not for the purpose of cutting, but to ensure an even flow of meal, which by this time is so fine as to necessitate very careful treatment, otherwise a certain amount of oil may be expressed rendering the meal sticky and difficult to induce to flow evenly through the rolls.

For this purpose special provision is made whereby each roll may be so adjusted as to ensure no more than the correct pressure being applied.

It will be noticed that these rolls are driven at both ends, this is to ensure steadiness and avoid any

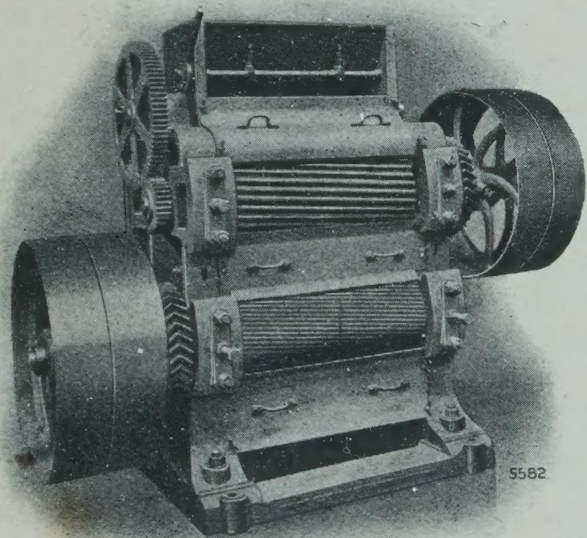


FIG. 5582.—Preliminary Reduction Rolls for Copra.

into the upper kettle and when desired is automatically passed to the lower one through an opening controlled by a slide.

During its passage the meal is gradually heated, and in the lower kettle saturated steam is added and diffused evenly throughout the entire contents, the

tendency to slip. There are also two rolls which are friction driven, and these are so adjusted as to give just the degree of slip necessary to reduce the meal to a fine flake.

made whereby one half of the side frame can be removed, allowing the rolls to be withdrawn without the necessity of lifting them over the top of the frames, which is the usual method with the Anglo-American

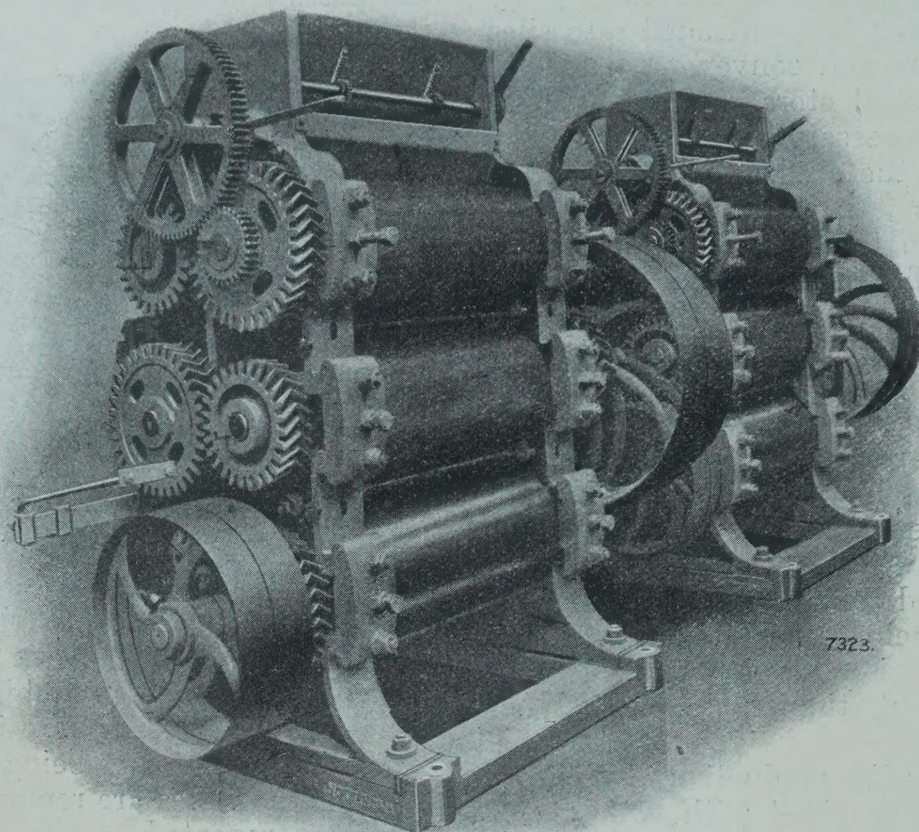


FIG. 7323.—Reduction Rolls for Palm Kernels.

With rolls of this type provision must be made for re-grinding, as it is essential for good work that they shall always be dead true; the weight being considerable, and the height necessarily great, provision is

type of rolls. Special provision has also been made whereby the bearings, which are of the self-oiling type, may be withdrawn without dismantling the rolls.

It is also desirable that the feeding of the rolls

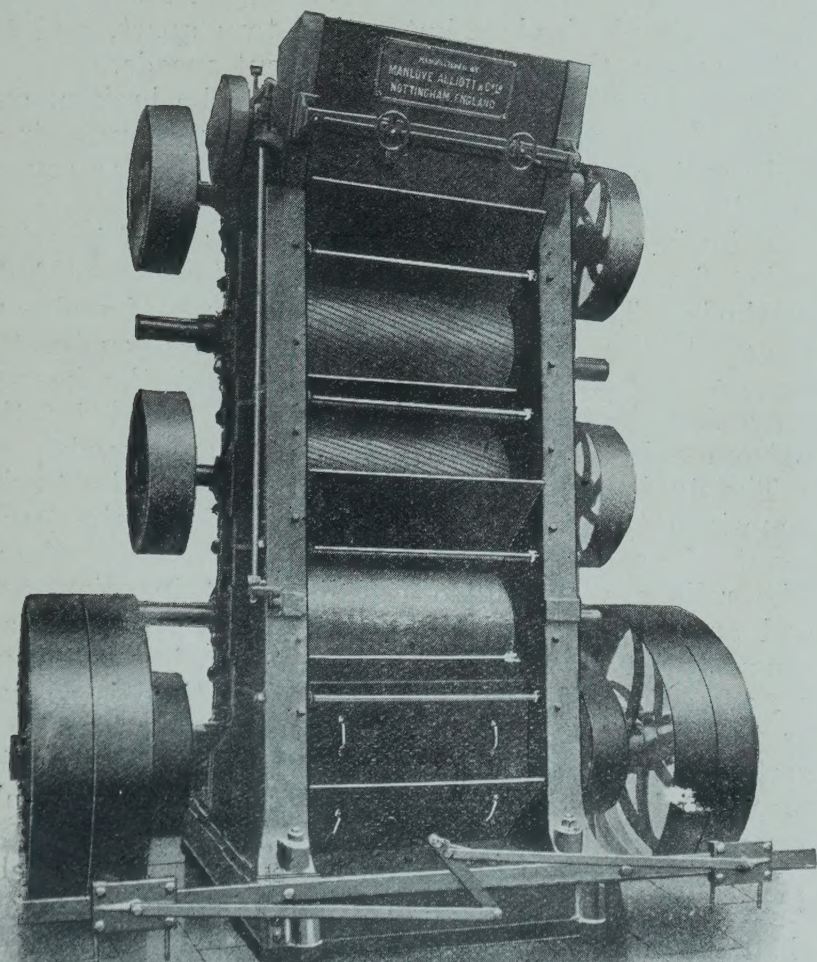
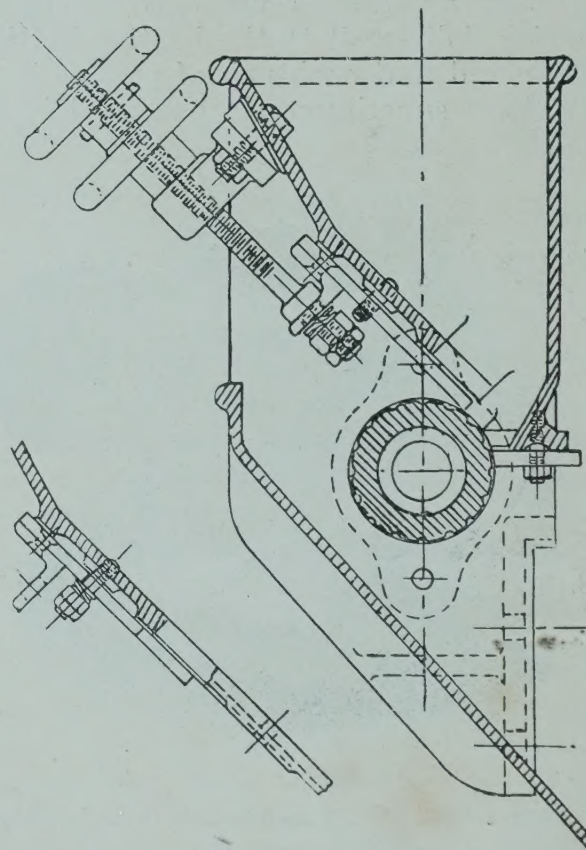


FIG. 7338.—Final Reduction Rolls.



Sketch.—Patent Automatic "Visible Feed" Hopper.

should be absolutely even and regular, and this necessity has of late been receiving considerable attention from engineers.

The slide illustrated shows an improved method, for which a patent has been applied, which fulfils the requirements.

It will be noticed that the feed hopper is divided into two sections, the upper one of which receives the broken seed, from which it passes on to a feed roll revolving in a direction opposite to the course which would be followed were the feed dependent upon gravity.

The adjusting slide is so constructed as to allow variation, not only as regards the thickness of the feed, but so as to permit of the seed being fed in greater volume to one side than the other, which allows compensation for any wear in the surface of the crushing rolls and ensures an absolutely evenly rolled meal.

The opening between the upper and lower portion of the feed hopper permits of the feed at all times being visible.

The heating kettle or cooker (fig. 5622), as will be noticed from the slide illustrated, consists of two steam-jacketed vessels superimposed, each of which

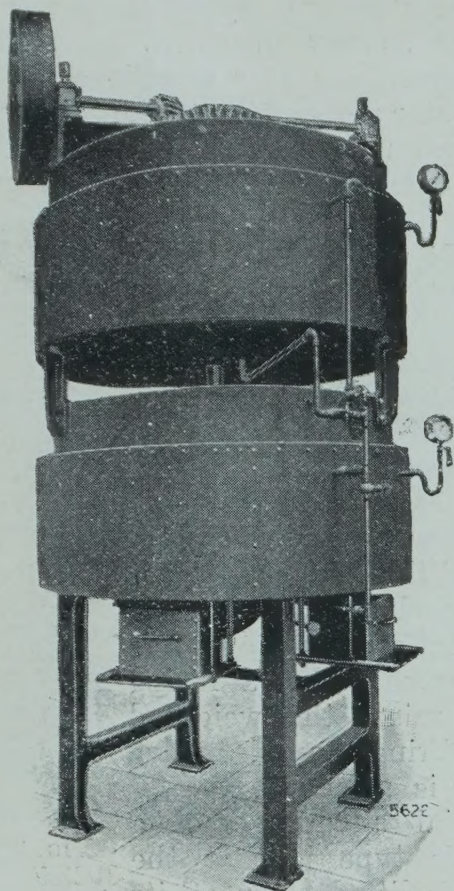


FIG. 5622.—Double Heating Kettle.

is fitted with agitating gear to prevent the meal adhering to the sides or bottom, in which case the meal would be burnt with consequent discoloration of the oil, and also to discharge the meal through the delivery mouthpiece when required.

Certain seeds contain a considerable amount of moisture in addition to the oil, and in order to obtain the best possible yield of oil it is advisable that this excess of moisture should be first removed so far as possible. This statement may possibly be criticized by many seed crushers, but my experience shows that if the inherent moisture is first removed, and surface moisture thereafter added, the results are thereby much improved.

The upper kettle receives the cold meal from the crushing rolls and retains it whilst the lower kettle is being emptied, and during this time it is possible to drive off any excess of moisture.

After delivery to the lower kettle the meal may be

moistened by the addition of saturated steam, preferably at a low pressure, and by means of a steam stirrer which ensures thorough and equal diffusion of the moisture thus added.

The hydraulic press is constructed upon the cage or stave system (fig. 5578).

This press is constructed with a ram $18\frac{1}{2}$ in. diameter for a working pressure of 3 tons per square inch, equal to a gross pressure of 806 tons.

As will be seen, the upper part of the cage, which contains the meal whilst under pressure, extends above the working floor and the top is level with the plate carrying the strickling box, which is used to convey the meal from the kettle to the pressing cage.

Suspended from the press head is a sliding head or ram which is withdrawn during the filling or emptying of the cage, whilst fixed in the press head is an inverted cylinder fitted with a hydraulic ram operated by a foot valve.

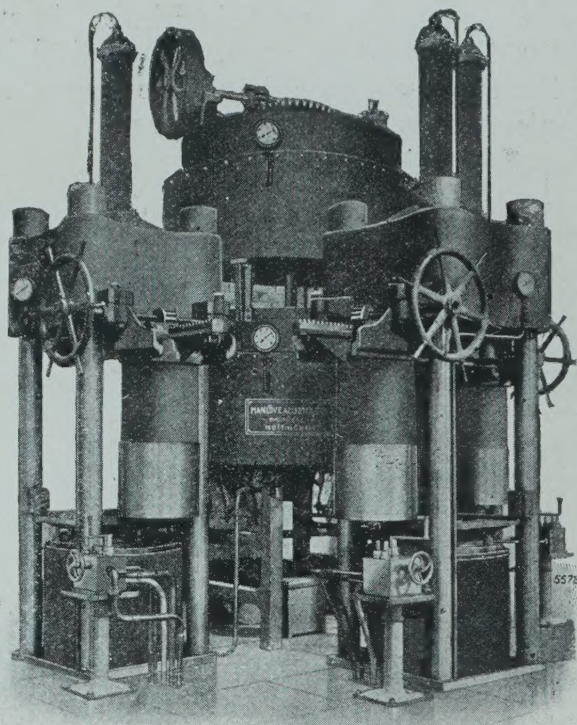


FIG. 5578.—Cage Press System.

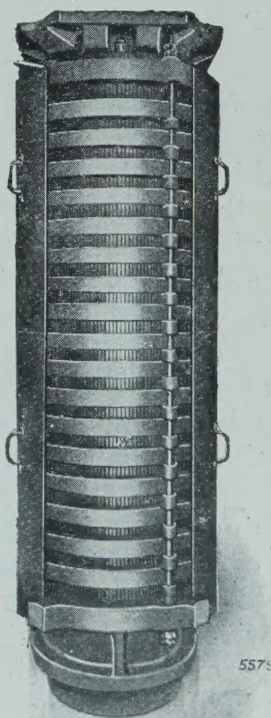


FIG. 5579.—Pressing Cage (covers removed).

The Pressing Cage (fig. 5579) is constructed of a number of special steel bars accurately machined and fixed on end, being supported by a solid steel casting at their upper and lower ends, and strengthened by a number of weldless steel rings suitably spaced to withstand the pressure.

The meal is measured into the pressing cage from the strickling box in sufficient quantity to form one cake, and a tinned or galvanized steel plate inserted after each measure of meal. The tinning of the plate prevents the adhering of the meal.

During the process of filling the press cage the ram, which has previously been raised to the level of the top of the cage, is gradually lowered.

The pressing cage now being filled, hydraulic pressure is admitted to the cylinder in the press head (fig. 5578), the ram therein being used for the purpose of packing the cakes and permitting additional meal to be added to that already contained in the pressing cage.

Upon the completion of this operation the sliding head is placed in position over the top of the pressing cage, and hydraulic pressure admitted to the main cylinder—low pressure is first admitted, generally about 1,000 lb. per square inch, followed by an intermediate pressure of 2 tons per square inch, and after a short time the extreme high pressure of 3 tons per square inch is applied. The pressure being applied thus gradually, and care should be taken that at no time should the pressure drop, the flow of oil is even and continuous.

During the time the meal is under pressure there is considerable side friction on the cage, due to the expansion of the meal, and this friction is sufficiently great to lift the pressing cage, the sliding head then entering the cage and equalizing the pressure throughout the entire mass of meal or cakes.

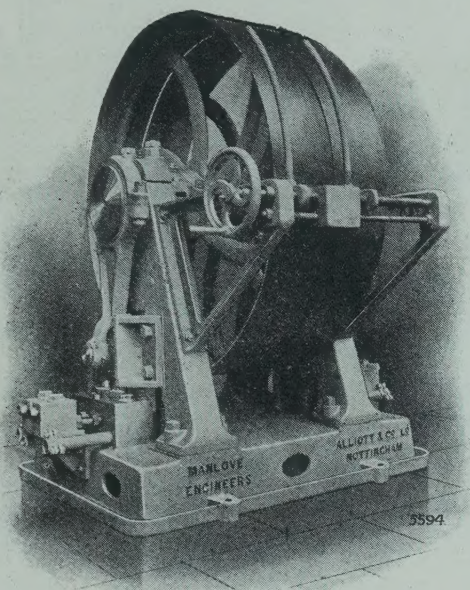


FIG. 5594.—Hydraulic Press Pumps.

The construction of the cage (fig. 5579) has a very considerable effect upon the result obtained. It is essential that the steel bars of which it is formed should be accurately spaced and thoroughly rigid. The spaces between the bars are usually about 5/1000ths of an inch, this distance being varied to suit the material treated. They are very accurately machined in order to allow of each bar being adequately supported, and in a cage correctly designed and constructed there is absolutely no escape of meal through the bars, whilst the oil can exude freely.

Upon the completion of the pressing the cakes are expelled from the cage by means of the main ram, the cage meanwhile being firmly held down by means of the sliding head, which upon withdrawal to the unloading position engages one side of the pressing cage, the other side being similarly held by means of clips attached to the press columns and operated automatically by the sliding head.

Each press has an approximate capacity of 10 cwts. of meal per hour, the oil left in the cakes varying from

4 to 6 per cent., dependent upon the length of time pressure has been applied.

The hydraulic plant usually employed in an oil mill of this description consists of belt-driven pumps and high, intermediate, and low pressure accumulators.

The pumps are designed to allow of continuous running, any repairs necessary being possible without stopping the factory.

The type illustrated (fig. 5594) are so arranged as to allow of the suction valves or delivery valves being exchanged in a few minutes.

The delivery valves are quite separate from the pump barrels, whilst both delivery and suction valves, being of the ball type, never require re-grinding, also the seats being renewable they can be withdrawn and replaced by new ones should the wear be excessive.

With three stages of hydraulic power, three accumulators are usually provided, each fitted with an automatic controlling gear to relieve the pumps when the accumulator reaches the top of its stroke and which restart the pumps when the demands of the presses cause the accumulator to fall to a predetermined position.

Photo 3974 illustrates a relief valve and automatic control gear of this type.

The accumulator in its rise comes in contact with the horizontal lever of the control gear, which is raised and held in position by the cranked lever which is forced forward by a spring. The rising of the horizontal lever operates the slide valve on the side of the relief valve, and this admits pressure under a lifting ram which raises the weighted lever, thus lifting the relief valve to which it is attached.

The special advantage of a valve of this type is that the relief valve is lifted clean off its seat, allowing a full bore exhaust for the pumps and thus avoiding undue wear of the valve seat.

The accumulator in its fall comes in contact with the cranked lever, which is forced back to its original position, and thus allows of the slide valve moving to the exhaust position and the lever lowering, which in turn closes the relief valve and re-starts the pumps.

Refining.

Crude edible oils contain two germs of rancidity, viz., free fatty acids and volatile fatty acids. It is therefore necessary to treat the oils in two stages, and in designing or arranging a factory for this purpose this must be borne in mind.

The design (drawing 10493) illustrates the arrangement of a modern factory for the production of edible oil from crude palm kernel, ground-nut, or coco-nut oils, having a capacity of 60 tons of oil per week, with provision for the extension of the plant to allow for the production of a further 60 tons per week at a later date.

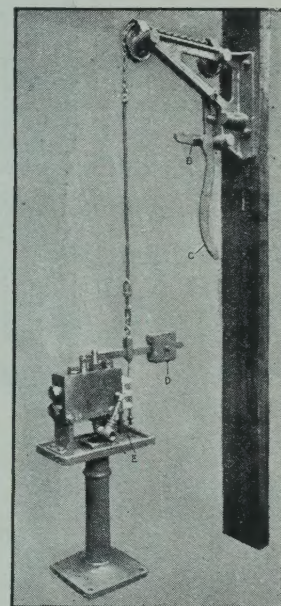


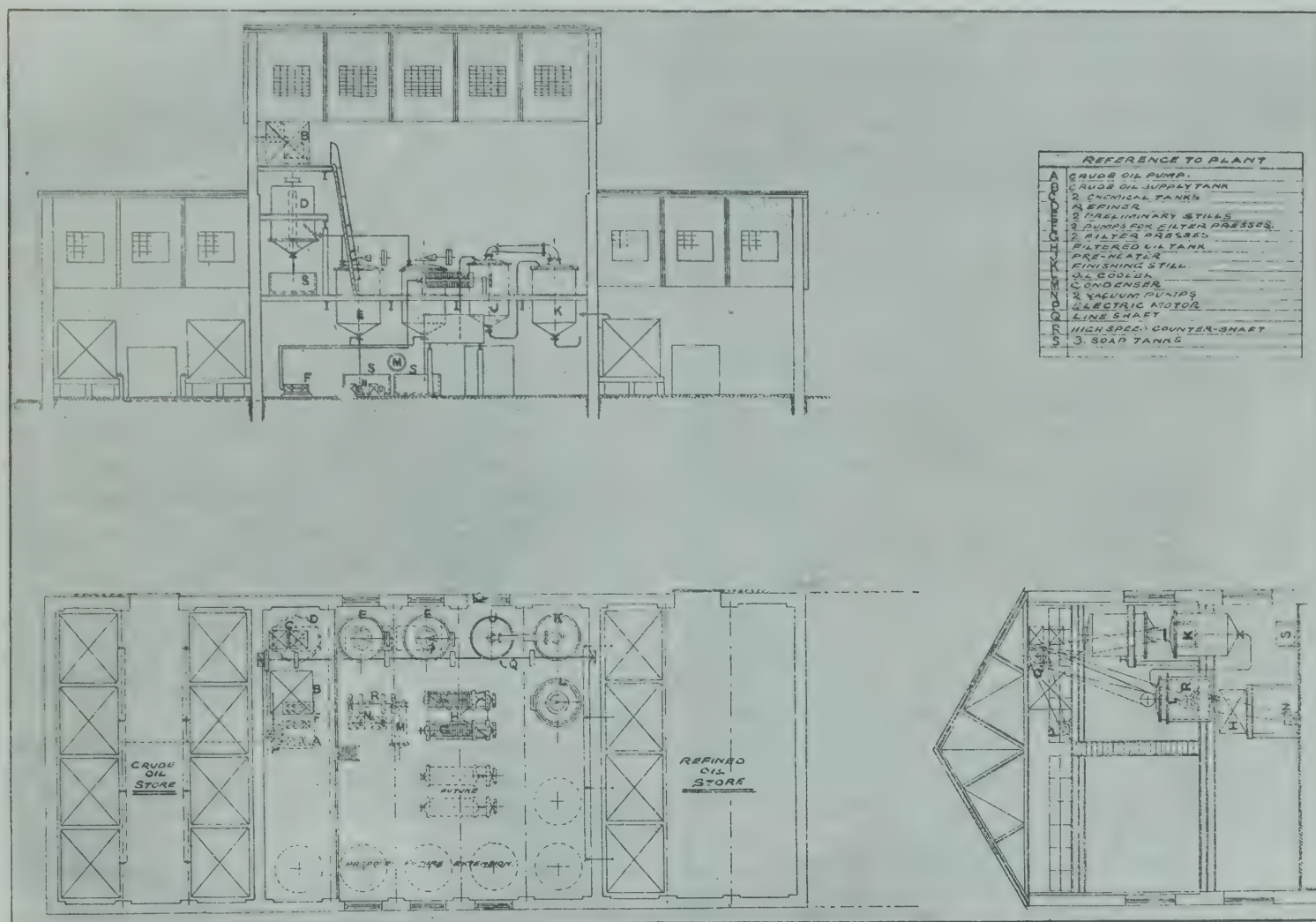
FIG. 3974.—Hydraulic Relief Valves and Control Gear.

The plant consists of a neutralizing or refining vessel (D), together with the necessary chemical tanks (C), preliminary still (E) for washing or bleaching the oil, preheater vessel (U) for the purpose of utilizing the waste heat for preheating the oil prior to neutralization, deodorizer (K) for the removal of the last trace of odour, together with the necessary filter presses, soap stock tanks, vacuum pumps and circulating pumps.

The various processes adopted by refiners have always been most carefully guarded and looked upon as trade secrets, and although the firm manufacturing the plant usually supply details of a process whereby a first-class edible oil can be produced, it is very rare indeed that once the refinery is handed over and regularly at work the engineers are allowed free

Meanwhile the chemist prepares the chemical in the tank provided for this purpose, from which the exact quantity required for the purpose of neutralizing the free fatty acids contained in the batch of oil is drawn into the second chemical tank, which is fixed immediately over the neutralizing vessel.

The chemical usually employed is caustic soda or soda carbonate, the latter being preferred by many refiners owing to the lesser risk of the formation of soap and consequent waste, whilst the former is often used, having been found to act more quickly and with better effect in certain grades of oils. The chemical is heated to a slightly higher temperature than the oil, and it is added whilst the latter is in a violent state of agitation. The agitation is continued for a period of about ten minutes, after which the chemical



D. 10493.—Edible Oil Refinery.

access, owing to various modifications and alleged improvements having been introduced by the chemist in charge of the plant.

I trust, therefore, that I may be excused if in describing the apparatus briefly I refrain from more than a general indication of the process itself.

Assuming that the crude oil has been filtered in the crushing mill and delivered into the receiving tanks, a test must be made to determine the percentage of fatty acids contained, after which the first portion of the process may be proceeded with.

This consists of the removal of the free fatty acids.

The oil is pumped or otherwise delivered into the neutralizing vessel or refiner, which is constructed with either a steam jacket or steam coil for the purpose of raising the oil to a temperature of about 120° Fahr.

is found to have combined with the free fatty acids and formed a flocculent soap.

A test is taken at this stage in order to ascertain whether the acids have been eliminated, and, if the previous calculation has been worked out correctly, the oil should prove neutral. If it is found by the second test that the oil is not neutral an additional supply of chemical is added during a second period of agitation.

After the agitation of the oil is concluded the temperature of the oil is increased to about 180° Fahr., when it is allowed to stand for the purpose of separation for several hours.

The clear oil is syphoned off, or pumped, into the preliminary still for further treatment, the residue being finally discharged into the soap tanks.

This residue may either be sold to soap manu-

facturers as soap stock, or it may be treated with acid for the recovery of the free fatty acids which are used for various purposes.

During the process of neutralization it will be found that the colour of the oil has perceptibly improved, but to produce a perfectly colourless oil it is necessary to employ a bleaching agent, generally fullers' earth, or Kieselguhr.

In the preliminary still, which is constructed to work under vacuum, the oil is washed and bleached; the former operation removes the last trace of soap and chemical, and the latter completes the removal of the discoloration.

This apparatus is constructed with an agitating device, but in this vessel the agitation is not required to be so violent as is the case in the neutralizer.

Many refiners dispense with the washing of the oil, in which case the preliminary still is not necessary, the oil being treated with the bleaching reagent in a subsequent operation.

If the oil is washed it is boiled, under vacuum, with half its own weight of boiling water for about twenty minutes, after which it is allowed to settle, when, if everything is in order, the oil should be clear; if not, then the first washing water is removed, and a second supply of hot water is added and the oil again boiled.

With an experienced refiner this second boiling is very rarely necessary.

If the oil is to be bleached it is first cooled, and the bleaching agent afterwards added and thoroughly agitated to ensure a perfect admixture with the oil, after which the mixture is filtered for the purpose of removing the reagent from the oil.

This completes the removal of the free fatty acids, leaving the volatile acids to be eliminated.

The oil is syphoned or pumped into the finishing still or deodorizing vessel, which is constructed to work under vacuum, and fitted with a steam coil or steam jacket for the purpose of maintaining the oil at a temperature of 120-130° Fahr. In this vessel it is treated with superheated steam at a temperature of 180-220° Cent.

The expansion of the superheated steam in a vessel *in vacuo* creates tremendous agitation, which ensures the slightest trace of odour being carried off by the vapour which is condensed, and if a surface condenser

is employed the volatile oil may be recovered and sold to the soap manufacturer. As the percentage of volatile oil recovered very rarely exceeds 25 per cent., many refiners do not trouble about this, using either a jet condenser or a simple coil in a tank of cold water.

It is essential during the process of deodorization that the vacuum on the vessel should never fall below 26 in., otherwise there is likely to be some condensation of the steam in the oil. Should this happen the temperature of the oil will at once rise, with a consequent risk of discoloration, which risk is further increased by the necessity of drying the oil. The length of time required for deodorization depends upon the quality of the oil, and it is therefore necessary to continue the treatment until such time as a test shows that the oil is perfectly tasteless and colourless.

As all edible oils when at a temperature above melting point are likely to absorb impurities from the air, it is necessary to maintain a vacuum on all the vessels used subsequent to the neutralization of the oil, and for this reason it is advisable that before contact with the atmosphere the oil should be artificially cooled.

A vessel with a water jacket and mechanical agitator is therefore usually provided in every up-to-date factory, which vessel is connected to the vacuum pumps, for the cooling of the oil.

This completes the refining process, the oil being drawn directly from the oil cooler into barrels or drums, when it is ready for distributing to the various factories making use of the commodity.

The time taken varies from six to eight hours for a batch of oil, but where a preheater is provided the process is practically continuous, as considerable time is saved owing to the waste heat from the deodorizing vessel being used to raise the temperature of the neutral oil to a temperature practically equal to the requirements of the deodorizing process prior to the oil being delivered to that vessel.

The losses in refining are variously estimated, but it is usually found that the reduction in bulk is about double the percentage of fatty acids.

The cost per ton varies in various districts, but an all-round figure of £5 to £6 per ton should cover all overhead and manufacturing costs.

At our request, and in order to avoid waste of time to our readers through having to write to us on the subject, Mr. Flockton (c/o Messrs. Manlove, Alliott & Co., Ltd., Nottingham) has very kindly offered to answer any reasonable queries that may arise in studying this paper and to give fuller particulars when necessary.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 1.]

JANUARY, 1919.

ANNUAL SUBS., 10/- (Post FREE.
SINGLE COPIES, 1/-

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
1919	1
Ex-President Roosevelt Dead	1
Training Tropical Agriculturists	2
Transport Facilities for the Tropics	2
The Coming Brazilian Sugar Supply	3
Coffee Planting for Profit.—No. XXIII. Thrips and <i>Hemelleia</i> in Coffee	4
Tobacco Planting.—No. XLVIII. Trade Prospects for Ourselves and the U.S.A.	5
Castor-oil Production, No. 1.—Future Prospects as to Demand	6
Sugar for Stricken Europe... ..	7
"Tropical Life" Friend.—No. 163	8
Post-War Trade in Brazil—Mr. Pape discusses its Possibilities	9
Where Fountains of Oil could run all day long	10
Cotton within the Empire	10
Cartoon—"Flappers and Freight Control"	11
Why not an Open Cacao Market for London?	12
Trade, Politics and Finance	13
The London Cocoa Market	14

1919.

OUR best thanks are due to the Acting Consul-General for Brazil, to Mr. Agostini, the Vice-Consul, to Baron Danvers and others for their help in making our last three issues—devoted mainly to pushing British interests in Brazil—the great success that they have been. Thanks to their help, and to the advice and assistance of other friends and supporters, the reception of these three issues exceeded our most sanguine expectation in every way.

With Mr. Woodroffe in South America, and the support of those of our advertisers who are particularly interested in the Latin-America markets, we shall continue to pay special attention to the agriculture and commerce of that continent. At the same time, the next (February) issue will deal with India to a considerable degree; the March number will discuss future trade possibilities in the West Indies; and, following on these, we hope to devote several issues first to Egypt and then to Japan.

Ex-President Roosevelt Dead.

READERS of our book, "The Rubber Industry of the Amazon," will have been reminded of the reference it contains concerning Mr. Roosevelt and his effort to make Latin-America, especially Brazil, better known to the English-speaking races and to Europe generally, when they read the obituary notices of the ex-President, whose death at this epoch of the peace—if it is peace—must be doubly felt. With the passing of Theodore Roosevelt, the world has lost a splendid example of life and energy put to their best issues, of a man who liked work and doing things for the pleasure of achieving the various objects in which he believed it his duty to take a part, and of an Ally, in the very best sense of the word, for all and everyone who disliked bullies, shirkers and exploiters as much as the Colonel did himself. Mark Antony would have found much to say in any oration he would have made over the ex-President, as he said over Cæsar according to Shakespeare's classical rendering. Modern Americans, with less time on their hands, and with a different audience to address, are more likely to sum up all Antony's praises of Cæsar, when applying them to their late Chief, in two, or maybe four words. He was "Some" American, and, above all, "Some" Man.

Judge Hughes is reported to have said, when speaking of what Colonel Roosevelt did for America, that "He aroused the American nation out of its lethargy and indifference, and supplied the driving force of the ceaseless and powerful demand which lay behind the efforts which made victory in the world war possible."

Training Tropical Agriculturists.

It will be remembered that on December 15th, 1917, the School of Tropical Agriculture at the Royal Botanic Gardens, Peradeniya, Ceylon, was formally brought into use (we still have our invitation to attend the ceremony hanging in front of us), and has been doing excellent work in spite of the War. Its full value, however, can only be realized with the coming of peace and the period of reconstruction to follow.

Nearly three years later, that is, on October 14th (we believe), the Governor of the Straits Settlements announced in Council that in part celebration of the centenary of the colony, the Government is going to establish at Singapore a college on the lines of the large provincial colleges of Great Britain, forming the nucleus of a future university.

This is indeed good news, for we feel certain that at such a college, agriculture—that is, of course, tropical agriculture—will not be forgotten, and will in fact play a leading part. Thus it may come, let us say that it *will* come about, unexpectedly and imperceptibly maybe, but none the less surely, that the foundations of our future agricultural colleges in the Tropics will by these means be well and truly laid.

The edifice, at first, may not take on the form we had looked for; it may not be given up solely to training men, and women, too, we hope, on scientific and practical lines for an agricultural career, but so long as it does train them for such a career we shall feel that we have taken several steps in the right direction. We shall then have an agricultural school in Ceylon, one or more similar establishments in the West Indies, and now a college, if not actually one devoted to agriculture, in Singapore. In a year or two's time we shall look for institutions to encourage scientific research in connection with all these, and shall by then expect to see tropical Australasia waking up as well. Then, and not until then, will the resources of this wide-spreading Empire run a chance of being developed as they can be, and should be, without strain or stress to anyone. Then, and not until then, will all races and ages of workers within the Empire be able to feel—as we have pleaded for in *TROPICAL LIFE* and on p. 31 of "How to Pay for the War"—that every man who means to get on shall get on.

ONE of our readers was inquiring about the value of whale guano as a fertilizer. Unfortunately we cannot find our notes on the matter, but have called his attention to the following paragraph which appeared in the *Journal* of the Board of Agriculture for June, 1916:—

"The Board of Agriculture desire to direct the attention of farmers to the fact that there is available in Great Britain a fair quantity of whale guano, for which there does not appear to be a very good demand. The average content of nitrogen and phosphoric acid in three samples analysed in the first half of this year is stated to be about as follows: Nitrogen, 8 per cent.; phosphoric acid, 10.6 per cent. (=23 per cent. of tribasic phosphate of lime). Oil, however, which has no manurial value, and may even in some degree retard the action of the other ingredients men-

tioned, was present to the extent of 14 per cent. The subject will receive further attention in a subsequent issue of this *Journal*, but it may here be suggested that if whale guano of the quality above mentioned can be obtained at a fair price compared with other artificial manures, it may be usefully tried with some crops."

We do not remember having seen any further reference to the matter so far, but will include such notes when we come across them.

Transport Facilities for the Tropics.

THERE is a story told of how the inability of leading men to appreciate minor details—in this case an unassuming but extremely necessary caravan of donkeys—caused many weeks of negotiations with strikers at a mine-head and with the directors and financiers in Europe to end in smoke and increased aggravation on both sides.

It was purely a question of high costs for food through an almost total absence of transport. To obviate this, arrangements were made to send the flour, beef, &c., to the mines to feed the men, and then to pay them a wage inclusive of food. But when the donkeys and the barrels came together, that which was so simple on paper was insurmountable in practice, for the poor, patient little beasts could not carry the loads placed on them, no matter how brutally they were beaten.

When one hears so much talk of feeding Europe, of feeding the Tropics, of feeding the southern hemisphere, one is led to remember this little episode and to wonder whether after all the ass is the most incorrigible donkey in the world as now arranged. We all know the saying, "It is a poor ass that cannot carry its own fodder." We have not yet encountered a four-legged donkey that could not do so, but when it comes to two-legged ones, then one cannot help thinking.

Much has been done to develop Brazil and South America since the War started, especially to enable those republics to send us more food-stuffs. Increased crops of considerable size have been produced, and, thanks to the huge prices paid, as for beans, &c., the cost of transport was lost sight of. It has been the same in Equatorial Africa, in the western republics of South America, and, in fact, in every portion of the world. Transport facilities have been conspicuous by their absence, and had it not been for the enticing prices paid, the quantities we did secure would not have been forthcoming.

To-day, however, with a greater demand than hitherto on non-European countries for food supplies, and with every ship possible pressed into the service of those who are busy bringing these food-stuffs to Europe, instead of as before being so short of ships for that purpose, it is the duty of all the centres to look out for and adopt the surest, safest, and least costly method of transporting their crops down to the railway or coast to feed the ships for Europe. To-day this is the *one* thing that must be done, in the same way as previous to November 11th the *one* thing was to carry munitions to the guns and food to the fighters.

It is impossible to lay ordinary railways in time; motor traction is insufficient as at present available, and cannot be added to in a hurry. Water transport is good to some degree when you reach it. Animal traction is too slow and altogether uncertain.

There is only one way to surmount the difficulty, and that is by running light railways through the producing districts in the same way as they were run everywhere at the front. A 40 h.p., or even a 20 h.p., Simplex Locomotive can do a "power of work" in an incredibly short time, and it is wonderful how soon the lines can be laid on which these handy but powerful little engines and the trucks behind are to run. The petrol tractor type of loco has proved extremely useful in India, and there is every reason to believe that they will do equally good work, certainly quite as necessary work, throughout South America and elsewhere in the Tropics.

These tractors or locos run on a gauge that is less than 2 ft., being 60 cm., or 1 ft. 11½ in. to be exact, so take up but little room, and are as easy to handle as the rails, in comparison to what "anything of a railway" is to lay. Above all, the system of control, being much on a line with that employed in motor-cars, is so simple that it can well be described as "fool-proof." We certainly hope to see these locos or Simplex Petrol Tractors as generally in use in the Tropics as they have been in France. They were badly wanted over there, but they are, and will be, quite as great a necessity in the Tropics now the War is over. If we are to pay for the War with celerity and facility we must reduce, and reduce to a very considerable extent, the cost of transport on the prime necessities of life. There is no surer way of doing so than by adopting locomotives or petrol tractors of the type described.

As *West Africa* so truly said in its issue for December 7th (when commenting on the important paper read by Sir Sydney Olivier on the "Re-partition of Africa" before the foreign and colonial sub-committee of the National Liberal Club and its friends, of which paper our contemporary gives a very full report), "As a wise American has said, half the tragedy of Africa lies in the word 'transportation.' That great word—a synonym, as Rudyard Kipling well says, for civilization—is evoking fresh meanings, or extensions of meanings, every day." It is up to the white races, therefore, as it is also their duty, to help civilize both the African and Indian areas of Latin America by increased transport facilities. Evil influence apparently needs a tractor to take it away. This being so, we say in all sincerity, "God speed the Tractor," for we know that once that help is assured the plough, peace, and prosperity will soon follow.

The Journal of the Board of Agriculture, London, for December, includes an excellent article on "Tractor Cultivation." Among the photographs used to illustrate the notes are two: the first showing a tractor and a three-furrow plough, by Ransomes, Sims and Jefferies, at work ploughing thirteen acres of turf, a task which was accomplished in three days. The second illustration shows the same area when the ploughing was complete. The evenness of the furrows is most noticeable.

The Coming Brazilian Sugar Supply.

UNDER the above heading the well-known London trade journal, *Confectionery*, in its November issue, pointed out in its usual article on "The State and Prospects of our Sugar Supply" that, geographically, Brazil is well situated for a progressive trade with Europe in sugar, and particularly for supplying not a little to the United Kingdom. The area at present devoted to cane is nearly 100,000 acres, and the production of cane is about a million tons. There are now thirty-three factories at work, and it needs a comparatively little time to enormously develop the great latent sources of production in a country where the area under the cane can be extended almost without limit. The one need is capital for improved methods of cultivation.* We fancy, therefore, it will not be so very long now before Brazil will fill a prominent place among the great sugar regions of the world.

Cuba, it will be remembered, produced 3,600,000 tons as her 1917-18 crop of sugar. This being so, what simpler mathematical calculation could be set the student of Brazilian economics than to ask him to ascertain how much land in Brazil could be made to produce sugar in the same way as Cuba does, and then to see that it produces it.

THOSE who have been responsible for the foundation of the Cervantes Chair at the University of London King's College may well look back with satisfaction at their activities. Before the War started there was practically no provision for the teaching of Spanish at any of the British Universities. King's College led the way with the idea of connecting the tercentenary of Cervantes with that of Shakespeare, and has now a well-equipped department of a professor and two lecturers, and a large and growing number of students. Other Universities quickly followed suit, and there is every hope that Great Britain will soon be prepared linguistically to take its share in developing the tremendous resources of Spanish South America. What is now chiefly necessary is to attract brilliant young men and women of the educated classes to take up Spanish as a special subject in their University Courses. It is all very well founding professorships, but it is necessary to find men to fill them. King's College being first in the field was lucky to secure the services of Professor Fitzmaurice-Kelly, whom every University in the Kingdom envies them. Where are the Spanish scholars to fill the other Chairs? Perhaps this paragraph may come under the notice of Spaniards or South Americans who have such perfect knowledge of English that they may be willing and able to take up such posts. Nothing, however, is so good for the purpose as Englishmen who have an equally first-rate knowledge of Spanish, as they attract English students in a way which no foreigner can do. Let us hope that the new department will produce such men, and that too before long.

* We see no reason why both of these should not be forthcoming at an early date. The first will beget the second, as improved methods of cultivation mean new agricultural machinery and sugar-making factories, which the makers both in the U.K. and in the U.S.A. will be wise to note.—ED., T.L.

Coffee Planting for Profit.—No. XXIII.

(Continued from December issue, p. 165.)

THRIPS AND HEMELEIA IN COFFEE.

It will be remembered that, in our issue for December, 1917, we called attention, pp. 180-182, to the prevalence of thrips on the cacao estates in Bahia. Since then we have received fuller details of the mischief done in Ilheus, the chief producing centre, but want of room so far has prevented my being able to refer to the matter again. To touch upon it at all would mean to go fully into details which would require two or three pages. Mr. Hull, the manager of the railway, is now on this side, and brought specimens with him to illustrate what he said in his former letters, reproduced in December. These specimens are now lodged with the Royal Entomological Bureau at South Kensington and being investigated.

Meanwhile, in case the thrips went South and visited the coffee belt, it may be as well to remember that Mr. le Poer Trench, Coffee Planter Inspector, attached to the Department of Agriculture at Nairobi, British East Africa, published the following statement, which we take from the Annual Report of the Department of that colony for 1915-1916:—

Regarding the trouble with thrips, on my return here, in April, 1915, from a safari to Sotik, I found that a "new pest" had broken out in the coffee in the Nairobi and Kyamba districts. On examination this proved to be a series of thrips, which pest had not previously been known to attack coffee. It caused considerable damage in parts of Kyambu, the trees most severely affected losing their secondaries and tertiaries and part of their primaries. In these cases I advised heavy pruning, to give the trees a chance to recover, and to check the dying back. I carried out various spraying experiments to combat the disease, and have come to the conclusion that a solution of (common) soap and water (5 lb. to 40 gallons of water) has the best effect on it.

With the advent of the rains the insects gradually disappeared, and, in most cases, the trees recovered and are now making good growth. In January, 1916, another outbreak was reported; in some places in the same fields as the previous one, though where it had been most severe in 1915, trees were not again attacked. I spent a week on Messrs. Coldham and Bentley's plantation in Kyambu, carrying out spraying treatments. The solution referred to above killed the insects, but apparently not the eggs, as four days after the application the pest was nearly as bad as ever. However, after a second and third spraying it all practically disappeared, and neither trees nor crop suffered to any extent.

Unfortunately, thrips feed not only on the leaves and young twigs, but also on the blossoms and berries; and these berries, and, indeed, those off any trees attacked, yield a very poor thin bean, and sometimes none at all. This seriously affects the value of the crop from an infected field. Blossoms attacked do not mature. I consider that if an infection be discovered and treated early small damage will be done. Constant watchfulness, especially in very dry weather, should prevent the loss of crop consequent on the ravages of this pest.

In the Muhoroni districts some of the insects were found, but in such small numbers as to cause no material damage. I attribute this to the greater rainfall in these districts, as rain has the effect of checking the increase of the insects. The trees, which were badly affected and which had to be heavily pruned, in some cases even lopped, have now put on good new wood.

In the middle of 1915 an outbreak of *Hemeleia vastatrix* was reported at the Government Farm at Kibos. Mr. Dowson gave the manager instructions as to spraying treatment for it. I have no fear of *Hemeleia* ever becoming a serious drawback to coffee growing in this country. Particularly in Kyambu, the tree seems to have a marvellously rapid power of recuperation after an attack, especially where the fields have been kept in thorough planter-like order. Plantations which I saw two years ago, badly infected, are now in excellent condition and are bearing good crops. Of course, due precautions should be observed, such as keeping the trees clean and well pruned, and, should an outbreak occur, spraying them thoroughly is considered advisable.

I am glad to see great improvement in the treatment of plantations; more especially in the pruning of both young and old trees. Now that most of the planters have tried pruning their trees and stopping them at lower heights, they begin to perceive the benefit of this work, and the advantage both to trees and crop.

There are still some districts which I have not yet had time to visit, such as Uasin Gishu, Nandi, and Machakos; and others to which I have not been able to pay a second visit, Nakuru, Solai, Sotik, and Kibos.

Part of my time during the last year has been taken up in compiling a pamphlet on coffee growing and manufacturing in this country, which pamphlet will, I hope, shortly be sent to press.

Owing to the appearance of coffee-leaf (*Hemeleia*) disease on the old plants, experiments being carried out received a somewhat severe set-back, as we had to spray the trees with Bordeaux mixture and liver of sulphur in accordance with recommendations made by the Government mycologist. This treatment, however, only rids the plants of the disease for a short time. Arrangements are being made for carrying a further series of spraying experiments on the diseased trees next dry season.

As damp conditions and dense shade are considered to be favourable to the development of this disease, all the banana plants shading the coffee were taken out. The soil around the roots of the plants was raised in banks, and the coffee kept regularly pruned to reduce the chances of further attack.

Mr. W. J. Dowson, another official, speaking of *Hemeleia*, said that in the early part of 1915 spraying experiments were again carried out on the coffee at the asylum, half an acre being sprayed with quarter strength liver of sulphur, and another half-acre with quarter strength Bordeaux mixture. Owing to the War, however, spraying with the former had to be discontinued, as liver of sulphur, being a potash salt, became unobtainable.

It was found unnecessary to spray the coffee in the Botanic Garden, which had not been attacked with leaf disease since October, 1914.

The results of the work on *H. vastatrix* so far show that for the Nairobi-Kyambu area sound cultivation with pruning and one or two applications of any dilute fungicide serve to completely check the disease. Once mastered, cultivation, pruning, and only one spraying a year are sufficient to keep the parasite well under control. Great stress is laid, however, on the condition that plantations must be kept clear of weeds and thoroughly pruned once a year.

With coffee at lower altitudes, such as that at the Government Farm, Kibos, it was found that the quarter strength mixtures were of little or no use in combating *H. vastatrix*. This is probably due to the lower (3,000 ft. to 4,000 ft.) altitude with consequent warmer and moister climatic conditions, which are much more favourable to the spread of the disease. In this connection experiments have been arranged in which a more concentrated spraying mixture will be used, and it is thought that a concentrated "carbide" mixture may effectively control the spread of the parasite.

In the absence of the entomologist, Mr. Trench and myself inspected some plantations in connection with the ravages of the coffee bug (*Antestia variegata*), and sections of the young berries were prepared and exhibited showing the damage caused by this insect. Similar work was also carried out with regard to the thrips, which causes a good deal of damage in the droughts.

During the year a pamphlet was prepared giving the results, and particularly the methods, of making up various spraying mixtures used in my experiments on *Hemeleia vastatrix* and some other fungous parasites which are found on coffee.

(To be continued.)

Tobacco Planting.—No. XLVIII.

(Continued from May issue, p. 76).

TRADE PROSPECTS FOR OURSELVES AND THE U.S.A.

Dun's Review for June, under the heading of "American Tobacco—a great industry that is only on the threshold of the Overseas Commerce that undoubtedly awaits it," has much to say that is heartening and hope-inspiring for producers.

"While the United States is the largest grower, manufacturer, and consumer of tobacco in the world," the article starts by telling us, "it has not hitherto devoted the attention to the possibilities of international trade in this great staple that the subject deserves. As a result of the world war we hear much nowadays about 'strategic positions.' The strategic position of the United States with respect to the world's trade in raw and manufactured tobacco is unique, and merits the careful study of every grower, wholesale distributor, and manufacturer."

Our New York contemporary then proceeds to sound the bugle to rally the tobacco world around the Stars and Stripes. Whilst we shall be quite pleased to see Uncle Sam withdraw as much of the German trade as he wants, we would, at the same time, urge British producers to note what our American contemporary has to say, and then do some tootling on their own

account to get their share of the trade as well, for at times it seems to us that the folks in this tight little island of ours have got a fixed idea in their heads that there is "nothing doing" with tobacco in the United Kingdom. If this is the case, the sooner they get clear of such nonsense the better for us, especially with the taxes that lie ahead. We may not, as an Empire, be able to do quite as well as the United States as regards bulk-trade in the production of leaf tobacco and the manufacturing of it into commercial tobacco, but there is not the slightest doubt that we could do far more than we ever have done with the trade, and the sooner those who are so busily talking about extending the Empire's commerce realize this the better for everyone.

"Not only," *Dun's Review* goes on to say, "are many varieties of tobacco raised in the various tobacco-growing districts of the United States that are in wide demand abroad, but this country is the logical assembling and distributing market for the products of its colonial possessions—Porto Rico and the Philippines—as well as for Cuba, San Domingo, and other tobacco-raising islands of the Caribbean, together with Mexico, Central and South America. At present—or at least prior to the War—the only points where all of these varieties of leaf could be found assembled in a single market were at Rotterdam or Amsterdam, two Dutch cities that have specialized in the handling of tobaccos for three hundred years. There is now, however, an unquestionable opportunity for the leaders in the American tobacco trade to organize a tobacco exchange, or general distributing market, at New York modelled somewhat along the lines of the famous markets at Amsterdam and Rotterdam. To this market would naturally come all of the types of tobacco leaf grown in the United States, Porto Rico, the Philippines, Cuba, and the entire West Indies. Here also could be brought importations from the Dutch East Indies—at least for the remainder of the War—as well as such limited supplies as can still be obtained of Greek, Turkish, Egyptian, and other trans-Atlantic varieties.

"Such a tobacco exchange, if organized with a view to holding frequent auctions or sales, equipped with adequate warehousing and distributing facilities and backed by the large and responsible organizations that already exist in the American tobacco trade, might well equal the remarkable success achieved in the fur auctions. The fur trade of the world formerly centred around the sales at Leipzig, but to-day more furs are distributed at the auctions held semi-annually at St. Louis and New York than at any other points. The tobacco trade of the world is shifting in the same direction, and if concerted efforts are made to meet the new conditions created by the War—as well as to take advantage of the favourable factors produced by geographical proximity to the majority of the world's greatest tobacco-growing regions—it seems altogether probable that a distributing centre can be created at New York that will dominate the world's tobacco trade of the future in the same manner that Rotterdam and Amsterdam have dominated it in the past. This would not in any serious degree reduce the trade at those important centres, since they would still control the distributing machinery for continental Europe, and would no doubt be adequately represented

at New York if a tobacco exchange were created here. But it would give the trade as a whole—both export and import—a powerful organization for extending the commerce of American tobacco houses throughout the world."

As we have already said, British producers and handlers of leaf-tobacco will be well advised to consider these paragraphs, and, having done so, act upon them to the benefit of themselves and the Empire at large.

(To be continued.)

Castor-oil Production.—No. 1.

FUTURE PROSPECTS AS TO DEMAND.

WE have received many inquiries as to how, when, and where the castor oil for lubricating machinery, and especially aircraft of all kinds, can be cultivated and at what cost per acre, and these are still coming to hand. Here is one of them: "Please let me have full information concerning the planting of castor oil, the class of soil and general conditions required, some idea of the yield per acre, and, if possible, a rough estimate of the profits that can be looked for."* As it is impossible to satisfy through the post such a thirst for knowledge concerning one of the most necessary of many necessary vegetable oils, we have agreed, in spite of having only sixteen pages at our disposal, to give up trying to satisfy our readers by letter, and to publish a few condensed articles in *TROPICAL LIFE*. It is only fair, however, to say that many of our contemporaries have published, and probably are still running, important and detailed articles on the subject, so we would recommend our subscribers to write to them for copies of such issues as well. The *Queensland Agricultural Journal* of Brisbane had a four-paged article (illustrated) on the subject. The Bureau of Science at Manila also issued a bulletin or Consular report, and the *Agricultural News* of Barbados devoted two well-filled pages on "The Cultivation of the Castor-oil Plant and the Preparation of the Oil," which we are partly using in the following notes. These are only three out of many; if, therefore, anyone claims that he cannot find any information on castor-oil cultivation, he must not expect us to believe that he has gone very far afield to look. Our old friend, M. Emile Baillaud, of the Colonial Institute at Marseilles, also devoted (in French) a complete pamphlet on the subject under the title of *Le Ricin*, as was done with another, *Bulletin* No. 4, entitled *L'arachide* (Ground-nuts). Those wanting to secure copies of these must write to the Secrétaire Général, Institut Colonial, Marseilles.

Most of our correspondents want to know whether the present demand for castor oil for lubricating aircraft will continue when the War is over. Of course,

we could write a long paragraph on the subject; we will, however, do nothing of the sort, for the simple reason that anyone who is capable of growing castor oil to pay should be as competent as we are to judge how the demand will continue when the War is over. The only statement we offer is that the airship has come to stay quite as much for the conveyance of passengers, of letters, and of goods as for military purposes. Of course, the output of castor oil can easily be overdone, but those who imagine that flying-craft will settle on the ground like flights of birds directly the War is over, and not rise again except for practice or pleasure until another war comes along will, we feel sure, be very mistaken.

Coming to the cultivation of castor, therefore, we must warn cultivators to study the various purchasing markets before starting and ascertain from whence they draw their supplies, what the cost c.i.f. at those centres works out at, and how their own oil was likely to compete against its rivals at whatever market was to receive it.

The Philippines, under the Americans, are likely to expend much time and thought on the production of the most perfect form of castor oil obtainable, as Uncle Sam is certain to remain as one of the great patrons of the aircraft industry, whether for war, for transport, or for pleasure. The Manila authorities have been urging agriculturists in the Philippines to investigate the possibilities of utilizing their lands for the production of castor oil. Here at least is one centre that believes in the future of the industry.

The same American consular report, from which the above was taken (see *Grenier's Rubber News* for 1918, p. 442. if you have not got the original), goes on to say that analyses made at their Bureau of Science show that the seed imported from India and grown in the Philippines gives a high oil content, very much greater than that from the local (Philippine) variety. Whether this higher oil content will continue, or whether it can be increased by scientific cultivation in the Philippines, remains to be seen. It will be as well, therefore, to watch any reports on the subject published by those islands from time to time.

The percentage of oil from the Indian variety grown in the Philippines, we are told, is very much greater than that from the local variety. The Indian seeds average about 52 per cent. of oil, whereas the native seeds contained only about 40 per cent. Each sample analysed in the Bureau of Science had a moisture content of 7 per cent. The seeds of the Indian variety weigh 610 gm. per litre, or 46 kilograms per cavan. Those of the small variety weigh 570 gm. per litre, or 43 kilograms per cavan. Basing the calculations upon these percentages of oil, and on a moisture basis of 7 per cent., there would be approximately 24 kilograms of oil from a cavan of seeds of the Indian variety, and only 18 kilograms of oil from the small variety, an actual difference of 6 kilograms of oil per cavan. The uncultivated native variety of bean yields still less oil and often is as low as 38 per cent., based on a 7 per cent. moisture content.

Cultivation, the reprint in "*Grenier's*" concludes by telling us, is simple, and does not involve so much actual work as does the growing of other staple crops.

* This is almost word for word what one of our correspondents asked for. We have only condensed the wording a little. It would require quite a large staff to adequately satisfy such enquiries at the rate at which they have been coming in during the past six months.

When once established, the plants thrive with little care and attention, and returns are certain. The plant is immune to destructive plant diseases, and insect pests are few and not serious.

(To be continued.)

Sugar for Stricken Europe.

THE systematic underfeeding of the nations of Europe, German or otherwise, who have been under the heel of Prussia since 1914, forces one to think of the best and surest way to bring back these people to health as soon as they come into the hands of the Allies. In such a dietary as will be needed for these under-nourished millions large quantities of sugar must be included to help supply the right kind of stimulating nutrition. This is why, as the Allies drive the Germans back to the Rhine, and, we hope, a long way beyond it, larger demands must be made upon those who are free, in order to patch up, so far as they can be patched up, those who have been freed.

For such work, as the sugar journals are reminding us, sugar is a useful and valuable food. It must, however, be remembered that it is a concentrated food, and therefore must be given out in moderate quantities, especially as, on account of its agreeable taste and stimulating properties, more may be taken than will be wise for the consumers after their long fast. Again, as with all concentrated foods, sugar seems best fitted for assimilation, especially by underfed people, when supplemented with the other foodstuffs. This, of course, is well known, for whilst people leading active lives can take sugar as they wish, those with delicate digestions, as German-starved Allies are sure to have, must have the sugar rationed out with care. All the same, the quantity that will be needed, and is already being needed, must, in the aggregate, be very large.

WHILST marketing for Xmas we realized the fact that, even in popular shops and on the street barrows, coconuts were selling freely at 1s. 6d. each, and Brazil nuts at 3s. 6d. per lb. Ordinary sewing cotton is also at an outrageous price, at least three times the pre-war standard. A 1d. reel is now 3d., and 2½d. reels must be sold at 7½d., and we understand that retailers have been warned that they are on no account to sell their reels below these rates. How do these rises compare with current prices now paid to the producers as against their rates before July, 1914?

REFERRING to the plea to our readers embodied in the article on "Ground-nut Products for Feeding Hogs" in the September issue, one of our subscribers sent us the following extract from (he believes) the *Oil Miller* in America, which tells us that:—

"The hog is a great factor in meat supply because of his prolificacy. The increase from cattle is estimated to be from 80 to 90 per cent. in a year; from sheep from 100 to 150 per cent., while in hogs it is from 1,000 to 1,800 per cent. per annum.

"The hog is also a very efficient animal, because he can produce a pound of meat from less than any other animal. It requires about 13 lb. of dry matter to

produce 1 lb. of gain in cattle, about 8 lb. to 9 lb. in sheep, and only 4 lb. to 5 lb. in hogs."

This is why Mr. Hoover "whole-hogged" for hogs as the quickest and surest means of increasing the world's meat supply. Moral to the tropical planter: Come along in the ring and raise hogs to help Hoover and the Allies in Europe. But before you start to raise hogs, start to plant your ground-nuts on which to feed them.

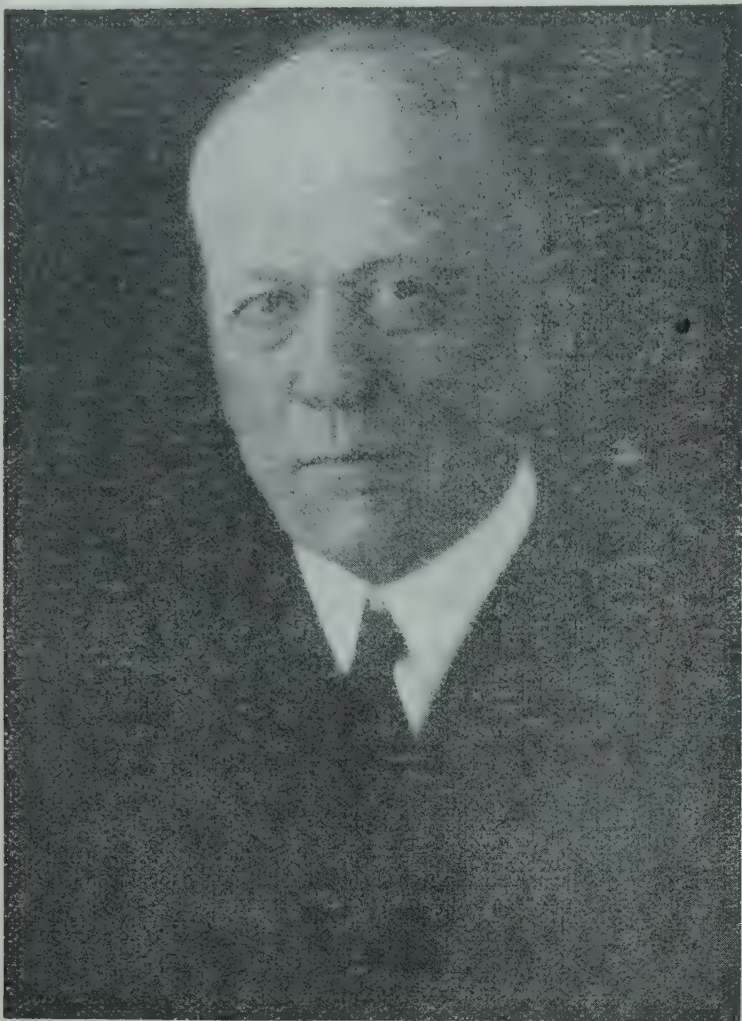
ACCORDING to a recent statistical publication issued by the Agricultural Institute of Rome, the world's production of rice, exclusive of the production in China, a very large rice-producing centre, is estimated at 60,000,000 metric tons, or 1,000,000,000 bags. The sixty million metric tons would be about equivalent to 2,200,000,000 bushels of rice. British India is put down as producing thirty-four million tons and the native states as one million tons, Siam two and a half millions, Java and Madeira at three and a half millions, French Indo-China three and a half millions, Japan eight millions, and Korea nearly two millions. All other countries are placed at smaller figures, the United States for only a half million tons.

(Continued from p. 8.)

President, and is Chairman of the Military Section of the National Research Council. Since 1917 he has been President of the National Academy of Sciences.

The long arm of fate has not, we regret to say, allowed "Our Friend" exemption from loss over the Great War. Since the entrance of the United States into the struggle, Dr. Walcott has divided his time between war work and the administrative duties of the Smithsonian. In spite, however, of the curtailment of his time for research work that this has occasioned, he has still been able to prepare a paper of unusual interest to paleontologists on the appendages of the Trilobite. To the War his contribution has had especially to do with aeronautics. He has also given two sons to the air service, one of them, alas! for ever, as it was his son, Benjamin Stuart Walcott, who fell in combat over the German lines, December 12th, 1917.

Oak trees take up much room; their branches of knowledge cover that of many ordinary men. Since this is so, we must be excused if we do not pretend to give more than the above prominent points concerning "Our Friend." To jot down the mere list of all that America and the world owes Dr. Walcott would fill this number; to discuss them would fill a book the size of our "Rubber Industry of the Amazon." Such a book is certain to appear, but if it is to be after Dr. Walcott's death, may its appearance long be delayed. He has been Secretary of Smithsonian since 1907, and since then has paid particular attention to the lower Paleozoic (Cambrian) and pre-Paleozoic (Algonkian) sedimentary formations and included organic remains. Read his "Evidence of Primitive Life," already mentioned. It only covers a few pages. It is freely and beautifully illustrated, and shows to the most unappreciative man or woman a wealth of knowledge and a power of observation that is beyond belief.



"Tropical Life" Friend.—No. 163.

DR. CHARLES DOOLITTLE WALCOTT.

Secretary of the Smithsonian Institution, Washington, D.C., U.S.A.

DR WALCOTT, both in name and nature, can well be described as a paradox, for, although known as Doolittle, no man can do more than he has done whilst on this earth (i.e., if he wishes to stop here), and whilst among the most up-to-date of men in the scientific world, he is also a few million years—a mere ninety millions or so—old in his knowledge of the earth and its formation. But then, what else would you expect of the man considered by his peers to be worthy of the Secretaryship of the Smithsonian Society?

Our first remembrance of this important body was gathered from an account of travels in a distant but little-known land, written by one of the best known wanderers of his age, who told us: "I had many letters of introduction from the Foreign Office, from —, our Ambassador at New York, and equally leading men. Without wishing to be disrespectful to disparage these good friends, or to be ungrateful to them for all the trouble they have taken to make my journey as easy and profitable as possible, I am obliged to own that no letter which I presented opened the doors quite so wide or quite so rapidly as did the letter from the Smithsonian Institution at Washington. It seemed a veritable 'Open Sesame' to fame and favour in every way! Mules appeared from nowhere, carriages were rushed round, meals prepared, and leading families showed a willingness to help me attain my ends that was as unexpected as it was pleasant."

Truly "some institution that," as the American is credited with being fond of saying.

Going back to the 90,000,000 years of knowledge of the Secretary of this widely known Institution, those who have studied Dr. Walcott's "Evidences of Primitive Life" will remember the opening sentences. They run thus: "Few of us have a clear realization of the age of the earth which carries with her the secrets of a long and busy life. With all her evidences of youth there is to be felt, especially among the mountains, a sense of age and infinite power. Her age in years I will not attempt to discuss, but, according to M. Joly, figures dealing with the relative age of the sedimentary strata for each period of its history point to a minimum time limit of the age of these strata of scarcely less than 90,000,000 years since water and wind began to transport continental earth and rocks over the land and into seas and lakes. How long before that the earth history began it is difficult to conjecture."

Students of the earth's surface and the possibilities of increasing its utility as a producer of crops, when they are inclined to chafe at the monotony and depth of their studies, should remember these giants of science who can see through miles of strata and deposits and be thankful that they who are mere pigmies in comparison, albeit very useful ones, have only to obtain a knowledge of a few inches below the surface.

To the scientific world Dr. Walcott is perhaps best known as a paleontologist (paleontology is the science of extinct organisms or fossil remains) and geologist. Born in the State of New York in 1850, and educated at Utica with a view to a mercantile career, he early showed a predilection for the study of nature, and particularly for geological research, and made his first field excursion as an amateur geologist in his thirteenth year. From the planting of this unpretentious acorn, what a mighty tree of knowledge has grown up.

It will be known by many that the unique foundation, known as the Smithsonian Institution, was created by Act of Congress in 1846 under the terms of the will of James Smithson, an Englishman who, in 1826, bequeathed his fortune to the United States of America, "to found, at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." Truly has America fulfilled her trust, and followed out the instructions of the will. We hope when a Smithsonian bequeaths to English hands a sum of money to establish agricultural colleges and institutes of scientific research in the Tropics that we shall be able, seventy years after the date of their foundation, to give as good an account of our stewardship as America can of hers in respect to the Smithsonian legacy.

This reminds us that Dr. Walcott, besides being the indefatigable Secretary of the Institute, is also active in many other directions, being a Trustee and Chairman of the Executive Committee of the Carnegie Institution of Washington, of which he was the first secretary. He is a member of two military committees; Chairman of the Executive Committee of the National Advisory Committee for Aeronautics appointed by the

(Continued on p. 7.)

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—Changes of address should be promptly notified.

7.—Non-receipt of copies of the Journal should be notified to the Publishers.

8.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

JANUARY, 1919.

Post-War Trade in Brazil.

MR. F. A. G. PAPE DISCUSSES ITS POSSIBILITIES.

MR. M. T. DAWE, Director of Agriculture at Bogotá, Republic of Colombia, whilst on a visit to New York City, came across the following excerpt in the columns of the *New York Journal of Commerce*, and was good enough to send it across. Meanwhile we have also received a copy of the English translation of Mr. Dawe's "Journey Down the River Magdalena," which we acknowledged last month.

Remembering what we had to say in our May issue (p. 75) on Mr. F. A. G. Pape's,* and also on Miss Elliott's views on the future of Brazil as an oil-producing country, it is interesting now to note that the *New York Journal of Commerce* told its readers as follows:—

Mr. F. A. G. Pape, of this city, well known in both hemispheres as a champion of and expert in coconut, oil-palm, and fibre growing, with ample experience in British, Dutch, and French colonies, has joined a new Brazilian enterprise known as the "Companhia Pastoriel e Industrial Piauiense," and expects to sail in a few weeks to take charge of the new enterprise.

According to Mr. Pape, Brazil, quite as much as America, is beginning to realize her opportunities for expanding her world trade and is undergoing a tremendous progress. Brazil, like other countries outside the war orbit, has had an era of prosperity for some years past, and money has accumulated in many hands. It is, no doubt, owing to this potent fact that the present tendency of progressive development has arisen.

There is a rational ambition in Brazil to expand in manufactures and industrial pursuits. Their vast store of valuable indigenous raw materials, plus their inability to satisfy local demands for manufactured goods, owing to the war stress elsewhere, has produced an independent spirit and the wish to do for themselves what others have hitherto been doing for them so as to satisfy all local needs. These needs, for instance, include enormous quantities of baggings, binder twines, cordage, &c., for use in Brazil for coffee, cacao, sugar, &c., and also for supplying their immediate neighbours' wants, too. Over 32,000 tons of binder twine are needed in South America alone, and besides this, how many millions of bags for wheat in Argentina, for coffee in Brazil, and for sugar and cacao as well.

Brazil is also becoming an appreciable factor in fruit growing, and it is only a question of time when they will compete very fairly in the markets of the world. Those portions of Brazil which are free from frost and scorching winds grow in half the time taken in the temperate zone excellent oranges, limes, pineapples, bananas, &c., and it is only a question of system, energy, and transportation for them to attain to front rank in this industry. They profit by cheap water carriage all the way to the biggest consuming centres.

Brazilian financiers and business men generally are determined to take their proper place in the ranks of the world's providers of some of those indispensable staple products which they can make available and supply at cheaper and faster rates than anyone else and within quick reach of the biggest markets. It is becoming well known that within their vast domain they have adequate means, resources, and facilities for exploiting, growing, and distributing to the balance of mankind a sufficiency of vegetable oils and fats on a scale to render these important commodities purchasable by the most slender purse.

Moreover, as regards replenishing the extremely diminished and depleted world's stocks of cattle, horses, sheep, and hogs, the vast interior uplands of Brazil situated in all parts of the main ranges, from the State of Minas Geraes in the south to Pernambuco, Parahyba and Piauihy in the north, have been proven excellent for open-air pasturage. For this reason energetic steps are now being taken to further develop and extend as well as improve by artesian wells this desirable and lucrative industry. Wheat and other cereals are also receiving close attention, since it has been found in practice that there are many millions of fertile acres suitable and available for this crop.

Our enterprise is only one of hundreds of concrete examples of what is being done in Brazil to-day. The Companhia Agricola, Pastoriel e Industrial Piauiense owns a specially selected freehold-in-perpetuum estate

* Co-author of "Coco-nuts—the Consols of the East," by H. Hamel Smith and F. A. G. Pape. Second and enlarged edition, 13s. 6d. post free, of TROPICAL LIFE.

of 2,500,000 acres (4,000 square miles) of fertile alluvial arable and rich pasture uplands. The estate is served by rail, and by a navigable river carrying seventeen-foot draft. The power required for slaughter-houses, refrigeration, spinning, oil and other mills to be erected will be supplied by hydro-electric installations on numerous falls of tributary rivers on the estate. Breeding stock has been imported, and the ultimate capacity aimed at is 500,000 head.

Fibres and cotton are grown with excellent results, and a ginning mill is now in operation. Large sections are being planted with vegetable oil-palms and other edible nut-producing plants. This estate is capitalized solely in Brazil. Its president is one of the foremost men of affairs in the country.

Its purpose is to rely on native talent and resources. The world is still to-day, unfortunately, in the phase of destruction, and appears rather one-sidedly committed to it to the fateful omission or proper and timely preparation for the urgently needful construction for immediate and after-the-war necessities. But no harvest can come without sowing, and development on an adequate scale takes a long time. Even now, in the throes of stupendous war measures, the work of the constructor and the provider of ample and cheap foods must get busy and keep pace with all other world problems, for Europe must, for many months to come, be short of feeding-stuffs both for man and beast, and so unable to increase her live stock, as ought to be done, if her population is to be adequately fed. Even with hog-raising it is probable that a check will be apparent throughout the winter owing to the scarcity of food for the animals. What, however, is Europe's dilemma in this case is Brazil's opportunity, and Brazil means to take her place in the opportunity of these times.

Where Fountains of Oil could run all Day Long.

IF we were King in the World of Vegetable Oils, we would betake ourselves to Ceylon and set up mighty oil-extraction works there to express or "solve-out" the coco-nut oil and sell the cake locally. As we are only on the parity of the cat that could gaze at the King, we shall do nothing of the sort.

Messrs. Tata, Sons and Co., of Bombay, however, are evidently of our opinion, as, according to the *Indian Planters' Gazette*, this firm has acquired about fifteen and a half acres of land in Colombo for the erection of a new mill for the manufacture of coco-nut oil, vegetable butters and margarine. The machinery has been ordered from America, and the Indian Munitions Board has given the firm a priority certificate for the purpose, but owing to scarcity of tonnage it is not expected that the machinery will be delivered in Colombo before six months. In the meantime, the foundations of the mill will be made ready for the erection of the machinery as soon as it arrives. The company's oil expert is at present in America arranging for the selection and dispatch of the machinery.

Ceylon is not the only coco-nut centre with which

Messrs. Tata's name has been associated on lines similar to the above. But why is it only Messrs. Tata? Why, sometimes, is it not an English firm as well who seeks to launch out in the same way?

Cotton within the Empire.

THE Council of the British Cotton-Growing Association recently had an interview with Sir Henry Birchenough, K.C.M.G., the Chairman of the Empire Cotton-Growing Association.

Sir Frank Forbes Adam, Bt., C.I.E., presided, and congratulated Sir Henry Birchenough on the great work he had done for the Empire in his capacity as Chairman of numerous Committees set up by the Government. The British Cotton-Growing Association early in 1917 had come to the conclusion that the development of cotton cultivation within the British Empire was not receiving the attention and assistance which it merited from the Government, and that there was a good deal of indifference being shown which was injurious to the work the Association have at heart. It was therefore decided to send a deputation, which was received by the President of the Board of Trade, on behalf of the Prime Minister. The outcome of that meeting was the appointment of a powerful Committee, under the name of the Empire Cotton-Growing Committee, of which Sir Henry Birchenough is Chairman, to investigate the whole of the circumstances of the growth of cotton in the British Empire and to report. Lancashire, both employers and operatives, had subscribed liberally to the funds of the British Cotton-Growing Association, and nearly half a million of money had been raised without any return being made to the subscribers beyond the knowledge that they had so patriotically helped to extend the area of British-grown cotton.

The general public have yet to realize how these subscribers have sunk their money purely for the good of labour in Lancashire.

Sir Henry Birchenough explained that the Empire Cotton-Growing Committee was formed largely at the request of the British Cotton-Growing Association, supported by a strong recommendation of the Board of Trade.

WHETHER a scientific fact or not, the statement is to be met with that the goat and the sheep came from the same stock. What caused the split up in the family we have not yet ascertained, but we have certainly seen sheep in the Tropics that looked far more like goats, whilst some haired goats and sheep resemble each other in many ways. We are reminded of this by a sentence in *A Estancia* of Porto Alegre, Brazil, for March last year, which tells us that a common three-year-old black-marked goat, served by a common white ram, bore two healthy kids having the character of both parents. We have not seen the article in the original, but are told that there was a photograph showing one of the kids (which surely, should rather be called lambs after the father) with white wool.

THE FREIGHT QUESTION.

When and How will Rates be Lowered?



FLAPPERS AND FREIGHT CONTROL

"The Plague of Flapperism is apparently the chief plank in the Government's Reconstruction Policy."

—The Financial News, December 18th, p. 4.

In face of the aggravating silence on the part of the Allied Governments as to when and how freights are likely to be reduced, the following extracts from the report of the twenty-eighth Annual Meeting of Messrs. Bucknall and Sons, Ltd., will be of interest to planters and exporters of all kinds of tropical produce: rubber, sugar, cacao, sisal, coffee, wheat, maize, &c. It is certainly the only discussion we have seen on the subject up to the present. Having made the start perhaps others will follow the example set and persevere with such questions until a little official information is vouchsafed to us.

On the report having been presented and seconded (quoting the *Financial News*), Mr. H. Hamel Smith asked whether the Government could not see its way to publish advance notice, say, two or three months ahead, when a reduction was to take place in freights, and also whether it could not bring about that reduction by degrees, say, at the rate of 10 per cent. or 20 per cent. per month for an agreed number of months. Doing so would enable shippers abroad and buyers over here to make forward contracts without causing either

the buyer or seller to suffer. As the Chairman could tell them, an unexpected drop of 25 per cent. left them with a loss of £7 or £8 per ton on their cork imported at the top rates. That state of affairs was common with all produce from overseas, and it was not right for the Government to put either the buyers, sellers, or the distributors, who have nothing to do with the raw material, and therefore with freights, in a position of suffering such a loss, because nobody benefited by it, and it was only a matter of a little organization to prevent such a state of things occurring. The matter had been, and was still being, very much discussed, but nobody seemed to know what was in the mind of the International Shipping Control on this very important point. He would therefore like to know whether the Chairman had received any information on the subject.

The Chairman, in reply, stated that so far as they were aware with regard to the Government's decision respecting the reduction of freights, the only notice they had had was that they would be reduced 25 per cent., which took effect on December 16. He quite

agreed with Mr. Hamel Smith's remarks about the forward contracts, and they considered that in their present case the drop of 25 per cent. was done too suddenly, because they happened to have a very large quantity of their goods arrive at the extreme rate of freight, and, of course, their buyers said that they must have the benefit of the reduced freight. That meant to the Company a loss of about £7 or £8 per ton. For the contracts that they made they fixed a certain price f.o.b. They were then subject to the rate of freight. If there was an increase in freight and charges the buyer would have to pay, or if there was a decrease he would have the benefit. This, however, would not help the distributors, i.e., the buyers of the manufactured goods, corks or otherwise, who could not possibly sell their goods forward on a sliding scale based on the cost of freight to a third party. The retail and general trade of the country must and will therefore suffer owing to this uncertainty of costs. Far better have present rates, onerous as they may be, in existence until the end of March, or even until June 30, with the certain knowledge that during the six or twelve months to follow one or other of them an even monthly reduction would come into force until the normal rate was reached. The directors had no idea what the intention of the Government was, but they had represented to the authorities the serious loss that it would be on their stocks in the present instance, or with future reductions unless notice was given on ahead. Meanwhile the authorities themselves are fully aware of the inconvenience that the postponement of any reliable information is causing. According to the *Board of Trade Journal*, whilst it is highly desirable that manufacturers and shippers from this side should quote c.i.f. rates in place of the old f.o.b. or f.o.r. quotations, the authorities are obliged to acknowledge that in order to do as they ask we must know on ahead what the rate of freight and insurance will be.

Why not an Open Cacao Market for London?

GRENADA has been on the warpath over the small amount of tonnage allotted for her cacao last year, between January and October. The position as regards shipping facilities, said the President of the Grenada Agricultural Society at the end of October, is becoming commercially serious, for, as a result of the continued lack of shipping opportunities, the banks are refusing to make advances, and so were the leading local houses. All this has been going on whilst Trinidad had shipped 25,000 bags above her allotted share (out of a crop of 300,000 bags or a little less), whilst Grenada, out of a total output of only 80,000 bags at the most, of which perhaps half should come to Europe, had still 22,875 bags to send across before she had sent her share. The warehouses in Grenada meanwhile were said to have been so full of produce that the estate owners were being asked to send down no more cacao until a shipment had been effected.

The whole question of supply and of the prices to be paid is a very important one both to producers

abroad and the trade over here. I fear, however, that it will not receive the attention it deserves, at any rate in the near future. Yet to allow the matter to drift as it is doing at present is a serious menace to the future prosperity of the trade of the country. If it cannot be helped, well and good, but who says that it must go on? If anyone does, let them give their reasons to show they are right. We cannot think of any.

What we can think of, and what we know of, is that either the control of the cacao trade is very unfair to new firms wishing to start, or else it is very unfair to the planters abroad who supply us with the raw materials. London rates even through the war must make themselves felt throughout the world, and so when prices are low in the U.K. buyers elsewhere try to beat the producers down. Hence artificially low rates here can cause producers to be paid lower rates than they are entitled to.

If, on the other hand, as some claim is the case, manufacturers can go abroad and pick up what they want, where they want, and at whatever price the oversea seller demands, then the present policy is unfair to the cacao that has to come to the U.K. because of transport facilities elsewhere being difficult to obtain. Furthermore, no one will send cacao to sell in this market whilst higher prices can be obtained elsewhere; this means, therefore, that our supplies of the raw material will continue to be as small as possible so long as the level of prices here are below those ruling elsewhere. If prices here are not noticeably below the parity of Lisbon, New York, and the producing centres, there can be no reason for maintaining the control; if, on the other hand, our rates are unduly low and liberal supplies of cacao, &c., are diverted elsewhere, then this country suffers, for new firms, anxious to start manufacturing whilst the post-war boom is on, are discouraged from doing so owing to the impossibility of obtaining adequate supplies of raw materials to work on.

Surely it cannot be the policy of the Government to bolster up existing big firms, manufacturers or brokers, and to discourage new competitors from starting. Yet we would maintain that this will be the result of the present policy if a change does not soon take place. As it is, those who are not connected with the favoured ones are "feeling the draught" badly, dealers, brokers, exporters abroad, and so will the retailers here and the planters abroad before long. Monopolies often mean reduced competition and lower prices, and the elimination of the middle-men is not an advantage to planters. Who can deny that the cacao-manufacturing business in the U.K. since the war started has not shown signs of tending that way? State-favoured industries always produce inferior goods; has the chocolate offered for sale at an unreasonably high price for the goods offered since July, 1914, compared favourably at any time with what the public paid for better chocolate between 1912 and 1914? What has been the cause of this if not the control of freight and prices? If this has been the reason, why continue the control over prices now the war is over? Why not allow producers to have the real market value and offer consumers a good article at a fair price?

Trade, Politics, and Finance.

THE Blackman Export Co., Ltd. (also our other supporters interested in the production and export of machinery for use in the Tropics and Sub-tropics, when discussing future prospects with us) say that they can now supply fans of every description for drying crops, ventilating houses and other purposes. Those wishing to add these useful appliances to existing buildings, or to have new drying houses, &c., erected, can communicate with them, knowing that when received, the orders will be executed and dispatched without any undue delay. Judged by the number of visitors—still in uniform—who have been inquiring for drying plants, for vegetable-oil machinery, &c., a good time is ahead for reliable firms.

This reminds us that the United Engineers, Ltd., of Singapore, have asked us to point out that inquiries for their rubber machinery, smoke houses, drying sheds, &c., should be addressed as a rule to their London agents, Messrs. James Pollock and Co., Ltd., 3, Lloyd's Avenue, E.C.3.

We understand that an amalgamation has been effected between the Liverpool General Brokers' Association, Ltd., and the Liverpool General Produce Association, Ltd., under the title of the Liverpool United General Produce Association, Ltd. The business of the Amalgamated Association will be conducted from the above address.

The Commercial Intelligence Department hitherto carried on by the Liverpool General Brokers' Association, Ltd., will be maintained under the authority of the new Association.

With the results of the General Election made known and a most satisfactory majority for Mr. Lloyd George and a national, if not an Imperial mandate to get on and win the peace, we feel that the New Year has begun well. May it continue and end as it has begun. Unless it does, no one can claim that the war has made the world safe for Democracy, it will have only made the way safe for Bolshevism to start.

As a rule the *Court Circular* does not interest us to any extent. When those who are supposed to constitute the Court take a real and not merely a courtly interest in the Tropics and their progress, then maybe we shall take more interest in those who go to form what is generally known as the Court Circle. This month, however, we must add our expression of pleasure at the announcement that H.R.H. Princess Patricia of Connaught is betrothed to Commander the Hon. Alexander Ramsay, R.N., the brother of the Earl of Dalhousie, and to wish them both long life and all health and happiness. A real princess, as in the fairy-tales, is to marry a real sailor; what more can anyone want, child or adult, democrat or aristocrat?

Coming to more serious items of news, Mr. Lloyd George, who can well be said to have passed with General Foch, as he then was, together through the Valley of Death last autumn,* has now selected his

Win-the-Peace leaders, and is settling down to hurry matters along and make up for all the time lost since November 11th. There is much to be done, including the necessity of letting every German know and feel that he has been beaten once and for all time. Accounts to hand leave us in doubt on this point. Can it still be true that many Germans believed until quite recently that hostilities were merely suspended, and not that Germany had been thoroughly beaten—if this was so, whose fault was it?

In any case we must remember, as the *Observer* reminded us in an article on the past and future of the new Czecho-Slovak Republic, that although Germany has been defeated in the field, her arrogance has not been abated, and that is a mentality which only a fool would refuse to reckon with when discussing peace terms and arranging our post-war policy.

Coming to more commercial matters, we have to remind our readers that Mr. R. F. Woodroffe, whose portrait was included on page 150 in our November issue, is not only representing Messrs. John Ormerod and Sons, Ltd., but also the well-known firm of Henry Franc and Lauder, of Manchester and Bradford, who were established in 1857, and now occupy the premier place in the production of all kinds of fancy cotton and woollen piece goods for the Eastern markets. Now that the war is over and Latin-America will be coming to the front as buyer of these goods, Messrs. Franc and Lauder have asked Mr. Woodroffe, through Messrs. Ormerod, to push their goods through the leading firms in Brazil and elsewhere in South America.

All this time the Five Wise Men of Europe—Lloyd George, Foch, Clemenceau, Sonnino and Orlando—are consulting with other wise men, as to how the most just and most lasting form of peace can be given to the world, and the world is anxiously hanging on their decision. Whilst this has been going on, the villains in the play—Lenin, Trotsky, Rosa Luxembourg, Liebknecht (whom some say has not been killed), and Eichhorn—have been working in an entirely opposite direction.

It will be interesting to watch what effect, if any, the new Ministry will have on the development and prosperity of the Tropics and the Colonies, especially with Lord Milner and Colonel Amery, M.P., at the Colonial Office in place of Mr. Walter Long, now First Lord at the Admiralty, and Professor Hewins, who was Under-Secretary for the Colonies up to the General Election, but did not go to the poll in December.

"Lord Milner's advent at the Colonial Office," said the *Times*, " (which he was offered first more than fifteen years ago) comes as one indisputable instance of the right man transferred to the right place. The Empire has claimed the largest services of his life, and there was never a moment when Imperial relations stood in greater need of statesmanship. Colonel Amery is to us an unknown quantity from a tropical-colonial point of view, but he was born in India, where his father was attached to the Indian Forest Service, and he is married to the sister of Sir Hamar Greenwood, M.P., now Under-Secretary of State for Home Affairs, and a leading Canadian in our midst. A leading authority on South Africa (Colonel Amery gave us "*The Times History of South Africa*," 7 vols., completed in 1909), a much-travelled man and an

* When he was fighting so strenuously for unity of command, with no one to back him up, with the French lukewarm, the Press hostile and indifferent and vested interests strongly against him, it was then, when he won over that opposition, that our Prime Minister truly won this great war, and won it too, from all accounts, off his own bat. Did not Marshal Foch himself prove this when he told Mr. Lloyd George, who gave him supreme command, "I owe my success to you?"

ex-*Times* war correspondent, he has latterly done much work at the War Office, especially since he became an assistant secretary there. Altogether we feel that the new Under-Secretary of State for the Colonies will be, judging by his widespread experience, an excellent man for the work ahead of him.

We wish the best of luck to the new Under-Secretary of State at the India Office, The Right Hon. Sir Satyendra Prassano Sinha, K.C., who is not an M.P. He was the first member of our Indian Empire to enter the Viceroy's Executive Council, and was the first Indian, with the Maharajah of Bikanir, to be appointed to the War Cabinet and Conference. He is also the first Indian, according to the *Times*, to be elected K.C., and second only to Mr. Ameer Ali to be made a Privy Councillor. To cap all these other "firsts," he is now the first Indian to become a member of H.M. Government in London and a member of the House of Lords.

Coming to the market reports following on the opening of the New Year, we have still to report quiet and uncertain markets all round. Everyone, of course, is crazy to be off and get to work, but the Government still has the curb with a Spanish bit on them, so that they cannot go if they want. The demand for anything and everything is good, but then it must be remembered that available supplies are comparatively small, except perhaps of tea. What will happen when more tonnage is available remains to be seen. Planters and exporters must remember this, otherwise when they can ship, they may be disappointed, as they will forget that others will be shipping at the same time as themselves. The coffee receipts in Brazil to the end of the year amounted to 5,732,000 bags, against 9,624,000 last crop, 9,511,000 in 1916-17, and 11,272,000 bags in 1915-16. Auctions of this article have been resumed, when low middling greenish Jamaican sold at 105s. and 105s. 6d.; Nairobi up to 133s. 6d. for fine, and 140s. 6d. for peaberry; Uganda up to 102s. to 110s. 6d. for bold, fair to good, and 100s. to 107s. for peaberry. Let us hope, therefore, that a free market and public auctions for cocoa and rubber will soon follow.

Coming to the Bank returns:—

January 11th	1919	1918
Bank Bullion ...	£80,520,547	£59,078,666
Reserve of Notes ...	28,154,045	30,655,660
Private Securities ...	83,493,318	90,661,200
Notes in Circulation ...	70,141,020	45,703,130
Rate of Discount ...	5 per cent.	5 per cent.
Price of 2½ % Consols...	59	55½
Price of Bar Silver ...	48½d.	45½d.

As we go to press, January 18th, the markets all round are flat, the merchants, like horses, only being able to stand and chafe at their bits, restless and angry at not being able to start and export again. This restriction of trade is reported to have caused prices to drop, since to induce business lower bids have had to be accepted, and rubber, among other produce, closes weak and lower, even Hard Fine showing a decline. With more tonnage, however, prices should improve. With Shellac, T.N. Orange is at 285s. and A.C. Garnet 290s. Cotton has been moving irregularly, but on the whole a further drop has had to be faced. What the future will bring, however, no one can say with certainty, as there are so many conflicting influences at

work. Present quotations are between 18d. and 19d. for spot, and drop to 14·72d. lb. for May delivery. With rubber No. 1 Crêpe is at 2s. 1d. lb., or a fraction less, and smoked rubber sheets, standard quality at 1s. 11¾d. to 2s. lb., against about 2s. 6¼d. for hard fine, 2s. 4½d. for soft fine, and 1s. 8d. for Caucho Ball. West Indian sheet balata has been sold, on the other hand, at 3s. 9d. net spot, which seems, to our mind, to be a very full price. We are glad for the West Indian planter that it is so, but why should such a contrast exist between the rates paid for fine plantation rubber and balata? We remember—but never mind what we remember, we have now to quote up-to-date facts, not recall ancient historical ones.

The London Cocoa Market.

BY THE EDITOR.

I AM glad to see by the annual reports of the various produce markets that the query has been raised as to why the Government control of trade and prices continues and when it will be removed. To this I would add, Why is it there at all, now that the war is over; it is to stop profiteering on the one hand, or to raise revenue to pay for the war on the other? If so, desirable and worthy as both these objects may be, I would claim (and so does every man and woman in the street or in the shops who buys the goods, and who are, therefore, the truest and more reliable experts on the matter) that neither of these objects have been attained. Taking cocoa for one thing, the net proceeds realized by any planter under the Union Jack, except perhaps Trinidad, which can run to the United States and so get higher prices—and the retail prices paid by the actual consumer are not on a parity. Someone is withdrawing profits on a scale that should not be allowed. If it is the manufacturers, these profits should be reduced by removing all restrictions on the price paid for the beans, and so enable the planters under the Union Jack to realize values equal to those now being enjoyed by sellers to Holland, Scandinavia, and—let us be honest for once since the armistice is two months old—to Germany itself. Why should this not be? Who is getting the benefit of such low values as 85s. for fine Grenadas in London, against 105s. or 110s. for fine San Thomé at Lisbon, or the price paid for those 120,000 bags of Guayaquil for "Europe"? Those who actually deal in the beans know all the ins and out of the case far better than I do, but I do know what can be paid for raw cocoa in the U.K., what is paid for the manufactured article by the over-taxed suburbanite who is not a munition worker or a war profiteer, and also, and most important of all, what planters receive for their beans when they can ship them to countries other than the U.K. Knowing this, I would claim that to-day should be the day of the producer. Why not, therefore, take off his shackles and let him have a run? He has been bound hand and foot for nearly five years, so take care if he is not loosened soon lest his vitality is too low to enable him to fight the wily Hun successfully in the coming commercial war, for prolonged restrictions cramp both the

mind and the energies, and all the cramping seems going on on this side. We certainly are doing nothing to cramp Germany.

If the restrictions are being maintained in lieu of taxation, and the profits are finding their way to the Government exchequer, then I would claim that such a policy is a mistake. Surely more revenue would be forthcoming by unrestricted trading, than by the cramped, distorted and unnatural transactions that now pass muster as business. I consider that Messrs. C. Leary and Co. have put the case very plainly in the opening paragraph of their Annual Report on the Timber Trade for 1918, when they say: "Now that the almost incredible efforts of the Allies have brought the war to a successful conclusion, we can look forward to a period of prosperity, provided the various restrictions on trading are removed at an early date and freedom is thereby allowed to private initiative and enterprise." I hope, therefore, those in authority will review the situation in the near future, and again place British producers on the same parity as their competitors elsewhere in the Tropics. If profits must be paid, let them come from the neutrals and Germany. Switzerland has had a very good year, and Holland shows signs of buying largely. Spain and Scandinavia, and those who buy from them, can also pay high prices for raw cocoa. As I have already said, there is no need for them to have any raw cocoa at all. If we were a really serious, business nation, we should very soon change and adapt existing machinery and factories to turn out chocolate, cocoa powder and butter, as we did some time back to turn out munitions and margarine. Were this to be done, then England could soon feed Germany and the neutral countries, with the help of her Allies. Why therefore let them buy raw cocoa to manufacture themselves at a lower cost than we can turn it out in England? If Italy has to pay £50 freight on a 9,000 or 10,000 parcel of Trinidads,* the other countries of Europe who did not side with the Allies should be made to pay 50 per cent. more again (then they would be no more harshly used than every railway season-ticket holder round London, who never helped Germany in any way whatever). If such freights were charged, not only would the profit go to help the Allies, but the manufacturers under their flags (exclusive of Germans who have changed nations and names), would be able to place out the manufactured article more advantageously (taking into consideration the high cost of wages in England if nowhere else) than will otherwise be the case.

Meanwhile, Holland is certain to be out with a big market-basket to fill, if the Allies allow her to fill it. She has had a lean time, as was to be expected; whether she will be able to make up for it remains to be seen. I also hope what is allowed to go to Holland will depend on what she sends over the border. Her normal consumption, as a correspondent from Amsterdam reminded me the other day, used to run around 30,000 tons: what it will be during the next two years or more will depend on what export orders she receives and (I should imagine) where these come from. She certainly cannot expect to need 30,000 tons per annum

for some time to come, if ever, with the change in the affairs of Europe. If she is able to satisfy her own requirement during 1919 and 1920 she will be lucky. Some folks who do not carry their love for their dead or their memories on their sleeve would not, if they had their way, see Holland treated much, if any, better than Germany.

The last I heard about the Dutch market was that they were to draw 2,000 tons, say, 1,500 from Lisbon, and 500 from Surinam. There is, however, news of that parcel of 120,000 bags of Guayaquils that is to leave, or which has left for Europe, already referred to. I cannot believe this cocoa is for an Allied country. If it is, which port is to receive it, and, above all, which factories are to turn it into foodstuffs?

Whilst all this is going on the stock of cocoa in London fell to 95,000 bags on January 4th, as compared with 146,000 at the end of October, and 208,000 last year, whilst Havre had dribbled down to 12,403 bags, or, together, much less than the one reported deal of Guayaquils. Later figures show a further reduction in our stock of San Thomés of over half, say, from 39,124 bags on December 7th, to only 14,390 bags, as shown further on.

The Board of Trade figures for the complete year are interesting, as they show what the needs of this country have been during the past three years. One wonders how the manufactured article was distributed. How much went to British-born subjects, how much to those of our Allies. What proportion of our share went to civvies, what to the Army, and what to the Navy. These queries would be useful, could they be answered, in helping us to estimate with some degree of certainty, what the needs of the United Kingdom alone will be during 1919 and 1920. Here are the figures for 1918:—

Raw Cocoa Movements in the U.K.—*

12 months	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Dec. 31st. Tons.
Jan.-Decr., 1916—	88,812	37,896	24,053	43,550
„ 1917—	57,908	49,979	4,828	44,500
„ 1918—	42,769	61,253	584	24,200

Decr. 15,139 Incr. 11,274 Decr. 4,244 Decr. 20,300

During December, 10,843 tons of all growths were landed. Of this quantity, 9,290 tons, or nearly 90 per cent., came from the Gold Coast—think, therefore, of the quality of the prepared article given out for consumption, whilst America has been keeping out these inferior grades from Africa, and using the superior Central and South American ones or those from the Islands. No wonder American manufacturers send across samples to show us that "real nice" chocolate is still in existence, in spite of the war of freight control and low prices over here. Turn to the annual imports, and once again ponder over the quality of the chocolate and cocoa someone has been eating whilst war waged across the Channel. Out of 189,500 tons imported into the U.K. in three years, 116,600 tons came from British West Africa, against only 27,700 tons or so from the West Indies, and the insignificant total of 3,100 tons from Ceylon, which should have sent twice as much as that every year.

Board of Trade returns showing quantities of raw cocoa received from various producing centres:—

* See Messrs. Edgar Tripp and Co.'s (of Trinidad) circular of November 20th.

Jan.-Decr.	1918. Tons.	1917. Tons.	1916. Tons.
British West Africa ...	27,590	41,335	47,691
" " Indies ...	9,053	7,414	11,328
Guayaquil ...	214	1,815	10,415
Brazil, mostly Bahia ...	509	1,862	5,590
Ceylon ...	108	1,088	1,919
Other centres ...	5,294	4,393	11,870
Total ...	42,768	57,907	88,813

	1918 Bags	Value Fcs.	1917 Bags	Value Fcs.
<i>Havre Stock, December 31st—</i>				
Pará ...	796	150 to 155	1,956	125 to 127
Bahia ...	1,656	140 „ 147	11,427	122 „ 127
Venezuela ...	2,057	150 „ 185	13,715	125 „ 175
Trinidad ...	2,912	147 „ 153	34,344	125 „ 128
Grenada and O.W.I. ...	—	145 „ 150	13	118 „ 125
San Thomé ...	390	144 „ 147	542	120 „ 124
San Domingo ...	86	136 „ 142	3,100	118 „ 122
Haiti ...	688	134 „ 140	4,525	114 „ 120
Accra ...	512	132 „ 135	24,542	113 „ 116
Guayaquils ...	3,158	150 „ 160	17,675	123 „ 129
Others ...	93	—	4,565	—
Totals ...	12,348 bags		116,404 bags	

Now let us take the Bordeaux stocks, according to Messrs. Roche and Coret of that city, at the end of the year. The growths in the last two lines are somewhat "mixed up," but the totals are useful:—

<i>Bordeaux Stocks, January 1st—</i>	1919. Bags.	1918. Bags.	1917. Bags.	1916. Bags.
Bahia and Brazil ...	22,147	68,236	84,013	24,800
Venezuelan ...	6,284	9,924	12,045	15,208
Guayaquil ...	6,785	3,598	5,260	4,427
San Thomé ...	70,998	33,434	39,153	20,525
Trinidad, S. Domingo, Haiti, Martinique, &c. }	2,381	13,462	16,462	11,302
Accras, Madagascar, Congo, S. America, &c. }	21,401	54,997	65,896	7,942
Total ...	129,996	183,651	222,829	84,204

<i>London Stock, January 11th—</i>	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	15,514	16,571	17,327	7,054
Grenadas ...	6,807	14,947	11,305	6,607
Other W.I. ...	2,248	12,440	20,873	4,400
British W. African ...	23,746	59,483	40,465	13,857
Portuguese African ...	14,390	9,062	26,170	4,899
Cameroons ...	1,319	6,355	2,524	25
Ceylon and Java ...	7,891	30,750	22,676	16,965
Guayaquils ...	14,385	47,526	41,481	36,307
Bahia and Brazil ...	1,334	4,988	14,836	1,943
Others ...	3,480	6,309	9,849	7,059
Totals ...	91,114	208,431	207,506	99,116

Messrs. Theo. Vasmer and Co. have much that is interesting to tell us in a report that they have recently issued on the cocoa market, and start by telling us that "since the signing of the Armistice there has been considerable buying, principally, as far as we can judge, by neutrals in oversea markets, and St. Thomé, Bahia and Guayaquil cocoa have experienced heavy rises. Our representative on the Gold Coast estimates that this year's (1919) crop will amount to 60,000 tons, and if this is correct it will mean a shortage of 30,000 tons from there. We contend that the time has now come for control to be lifted. Control in its present form was never justified, as cocoa is one of the few articles that right through the war remained at a reasonable level."*

* I take this to mean at producing centres. In any case the statement is a mild one even from a manufacturer's point, for I consider that, as with rubber, prices have been forced down unreasonably and caused unnecessary anxiety to the planters, on the top of being short-handed because their helpers were at the war.

Nitrolim

Nitrogen Fertilisers much regret having to announce that they will be unable to supply any Nitrolim for Agricultural purposes for the Season 1917/18.

The demand for their Product for Munitions is so insistent that they are obliged to allocate, in this direction, the whole of their output of Nitrolim during the continuance of hostilities; but they feel confident that their numerous Clients will all agree that the vital and immediate necessities of the Allies must take precedence of all other demands.

They take this opportunity of tendering their thanks for the hearty support they have received throughout the United Kingdom and the British Colonies in establishing this Fertiliser, and they look forward, with confidence, to the time when large supplies will again be available.

They feel that the diversion of Nitrolim from the needs of Agriculture to the War requirements of the Allies will meet with approval, and trust to again receive the cordial support of British and Colonial Agriculturists on the re-establishment of Peace.

WINCHESTER HOUSE,
OLD BROAD STREET,
LONDON, E.C.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 2.]

FEBRUARY, 1919.

ANNUAL SUBS., 10/-
SINGLE COPIES, 1/- POST FREE.

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

Index for 1918.

The above are now ready. If any reader has not received a copy will he please let us know so that one can be forwarded immediately.

"The High Price of Sugar."*—No. 4.

THE "MYSORE ECONOMIC JOURNAL" ON SUGAR
PRODUCTION IN INDIA.

(Continued from November issue, p. 150.)

FOLLOWING on our Editor's article in last January's issue, when he claimed that all have agreed unanimously that the development of the resources of the Empire, including India, is necessary and should be proceeded with without delay, Dr. Barber, in the May issue of the same contemporary, tells us what science is striving to do in India to help in this work, whilst Mr. Lakshminarasimaiya discusses the industry as it is and as it could be.

Taking the latter article first, figures are given showing how the average exports of sugar from India for the ten years, 1882-1892, were 59,000 tons per annum, whilst in 1910 they stood at 6,170 tons only. Since the War started, however, the figures have increased to rather under 22,000 tons a year for three years. The importations, however, have also been large; whilst they were almost equal thirty years ago, they have increased to 226,000 tons in 1905-6, and 642,774 tons in 1915-16. All this time the acreage under cane steadily ran back from 2,758,450 acres in 1890-91 to 2,370,000 acres in 1911-12, a reduction of 15 per cent.; furthermore, the quantity of potential sugar, i.e., the sugar contents of the canes, has also fallen. This, it seems agreed, is due to increasingly bad cultivation. Where theories differ is as to the cause of this marked deterioration in the methods employed. Have the causes been due to high prices for rival crops as grains, cotton, &c., or to bad cultivation and wasteful methods of manufacture? In any case the writer asks: "Shall we watch with folded arms the slow death of one of our largest industries?"

Dr. Barber's article, we considered, goes to prove that the answer can well be in the negative. If India continues to allow her sugar industry to go back the fault lies with herself both officially and otherwise. Officially, because those responsible for the handling of affairs do not like being criticized and taboo all books, including our own that do so, and "otherwise," because landowners who ought to know better do not back up their authorities like Mr. Wynne Sayer, Mr. and Mrs. Howard, and Dr. Barber, and show that appreciation of and benefit from their work as they

CONTENTS.

	PAGE
"The High Price of Sugar."—No. 4. The <i>Mysore Economic Journal</i> on Sugar Production in India	17
Sisal for Selling.—No. VI. Soils and Climates. The Caicos Isles	18
The Cultivation of Rice.—No. 10. Rice-growing in Queens-land	20
Castor Oil Production.—No. 2. Seeds and Yields	21
Tobacco Planting. — No. XLIX. Planting Experiments in the F.M.S.	22
Lord Leverhulme as an Author	23
"Tropical Life" Friend.—No. 164	24
Brazil as an Ally	25
The Rubber Industry of the Amazon	26
The Brazilian Naval Ships at Portsmouth	26
Freights—Are they Up or Down?	27
Trade, Politics and Finance	29
The London Cocoa Market	29

* *Tropical Life* Publishing Department, 1s. 3d., post free.

should do, and must do, if sugar production in India is to assume the potential importance that it could easily occupy if her people were as anxious to shine as sugar producers as they are to become—let us say, politicians. In either case we wish them God speed, but sincerely hope they will make sure that they are on the right road before starting.

Dr. Barber's article, which was reproduced from the *Proceedings* of the Board of Agriculture in India, at a meeting held at Poona on December 10th last, comments as we did on the shortage of sugar, and states the fact that India's importations of sugar have increased to such an extent that now the annual total cannot be far short of 1,000,000 tons. This at present almost exclusively comes from Java. "The world's shortage," we are told, "has made itself felt in India in that the retail price has nearly doubled. Can India, taking advantage of this, produce this sugar herself? Can she indeed look forward in the future to becoming an exporting country as she once was? . . . I have formed the opinion that it will take many years before the price of sugar sinks to its pre-war level. One of the lessons of the War to the Central Powers will be, I believe, that it will be considered economical for much more sugar to be retained for internal consumption, both by man and beast, in Germany than formerly . . . There are many reasons for thinking that Java has nearly reached the limits of her production . . . With Cuba it is different."

The production of sugar, and hence the success of the industry, in India is handicapped by reasons that can be prevented if the ability and willingness to do so exists, viz.: (1) The crop must be made more profitable than other crops if the land necessary is to become available; (2) the sugar must be turned out in quantities and at a cost to enable it to compete with *gur*; (3) better classes of cane are needed, as at Nellikuppam in South Arcot, where sugar-cane cultivation made great strides; (4) advances must be arranged on terms that are fair both to borrower and lender, in order that the former can purchase fertilizers or other manures and arrange for irrigation and drainage as found necessary; (5) if the unhealthiness of Assam could be still further done away with, steadily increasing numbers of Bengal cultivators would go there, and should be induced to turn their attention to sugar rather than *gur* production. It is evident that, with certain precautions, thick canes can be grown with great ease over large areas of the grass land in Kamrup. There are large areas in Upper, Middle, and Lower Burma where thick canes can be quite easily grown, and there is any amount of uncultivated land available for the growth of sugar-cane, so much so that there is no part of India which can for a moment compare with Burma as a possible place for the installation of sugar factories.

We could continue these notes for another column, but lack of space prevents. We have, however, said enough to show that, provided banking facilities and the official guidance are forthcoming, to ensure that the growers adequately attend to the soil and drain or irrigate, manure and plough, as required, then no one need talk of sitting up with arms folded to watch whilst the sugar industry in India continues to go back and back.

Sisal for Selling.—No. VI.

(Continued from August issue, p. 121.)

SOILS AND CLIMATES—THE CAICOS ISLES.

It will be remembered that in the July issue we discussed which variety of *Agave* might be most suitable for planting according to the climatic and soil conditions of each centre. Taking it for granted that this knotty question has been settled, as well as the equally contentious one as to whether bulbils or suckers shall be used, we had better discuss soils and climatic conditions in this and the following issue, and then go on to cultivation and planting.*

Coming to the question of land, we pointed out in our original series of articles on the subject (December, 1907, and February, 1908) that Dr. Harold Mann tells us that it has been suggested that the poorer the soil the better the sisal grows, but we do not plant sisal to make it grow, but to give us good, strong, and long fibre. While, however, the above statement as to poor soils depends on local conditions, it may be said, to put the statement in another and more correct form, that the sisal plant does not require a rich soil. In article No. VIII we shall discuss the question of rich and poor sisal soils more fully. In Yucatan, from all accounts, the conditions generally are poorer, and give the plant a much keener struggle for existence than those likely to be met with elsewhere.

Condensing Dr. Mann's summing-up, we would say that:—

- (1) A well-drained soil is the first essential. A water-logged soil means dead sisal.
- (2) The land must be moderately light.
- (3) An over-rich soil leads to a reduced percentage of fibre in the leaf. The richer the land, the greater percentage of pulp, and the smaller the percentage of fibre.
- (4) If the land is too poor the fibre will be short; in such soil the venture is not likely to be successful.

Even if your land is satisfactory to start with, you can cause it to become too poor to be suitable for good crops if you are not careful. "Continuous planting," quoting Mr. Frank Couter's *Hawaiian Bulletin*, "exhausts the plant food that is available, and so causes the plant to make a slower growth, and that means loss of time before the leaves come to maturity and are ready for cropping."

In his report on the Caicos Islands (attached to Jamaica for administrative purpose), with special reference to the further development of the sisal industry out there, Mr. F. N. Watkins, the then Commissioner, told us (in June, 1907) that in the neighbourhood of Kew, in North Caicos, which island

* As we are constantly being asked what last year's chapters have been devoted to, the following may be of use:—

Chapter I. in January discusses the literature published on the subject, at any rate that which we possess.

Chapter II. in February discusses the Mozambique Co.'s area, and the query as to whether Bulbils or Suckers are preferable.

Chapter III. in March is devoted to Mr. Heron's opinion regarding Bulbils and Suckers.

Chapter IV. in July deals with which variety to plant.

Chapter V. in August discusses Mr. Walter Draper's views on Sisal and its cultivation.

is twelve miles by eight miles through from north to south, is a considerable area of good soil which is being rapidly impoverished by defective methods of cultivation. Sugar was planted there in the old days, for the ruins of the old works are still to be seen. Judged by the size and vigorous growth of the few sisal plants to be found here and there, the land would be admirably adapted for sisal cultivation. At Bellevue plantation about 150 acres has already been planted, and the area is being extended. On Blue Hills a bigger island near to North Caicos is soil suitable for the crop, whilst on West Caicos or Belle Isle about 4,000 acres have at one time or the other been planted out, and if the venture has not paid, its failure to do so was not apparently due to the land, but to those who owned or cultivated it. The average value of sisal exported per annum for the eight years, 1899-1906, was £6,400. In 1898 the amount was only £2,902, but jumped up to £7,594 in 1899, and remained around £6,000 up to 1906. How the figures have run since we cannot say, but whether the industry has advanced or retired since that date, and we fear that it has not advanced, the possibilities or natural resources of the island do not seem to have been the cause of any non-success. This was proved as long ago as 1889, when the annual report of the islands spoke of the true sisal, i.e., *S. rigida* var. *sisalana*, having been found there, and that this kind of all the agaves grew most readily in the Caicos group, maturing early, and giving a strong fibre that, when sent to New York for sale, realized as much as the best Yucatan fibre. This is apparently due to the fact that the soil and conditions generally are singularly adapted for the crop, which, in some cases, at three years old, have, according to Mr. Watkins, shown fully matured leaves, 6 ft. in length, yielding fibre of the best quality. In 1906 and 1907 there were still large tracts of land of the most suitable nature available from the Government area, and an adequate supply of labour to develop and maintain an established industry. That is eleven years ago; those who know the Caicos Islands can still gauge, however, to a considerable extent, what conditions are needed, as far as natural conditions go, and also will be able to gauge why the islands have not come more to the front as sisal exporters. This latter is a most important fact to ascertain, lest the estates you are thinking of may have similar drawbacks and similarly suitable natural conditions, and it behoves you to take care to find out ahead how and where, in spite of apparent advantages, you might still go too slow or fail altogether.

In case trouble may arise over securing a copy of Mr. Watkins' report (price 3d. post free, Cd. 3766, No. 43 of 1907, Wyman and Sons, Ltd., Fetter Lane, E.C.), we will give the following notes regarding the most suitable soil and distance for planting based on what he says:—

The most productive sisal soil, judging by the Caicos Islands, is that of which the geological foundation is wholly limestone, and in places where the rock is covered with hardly sufficient soil to give the plants a hold. It has been found that the struggle for existence in such land prevents any approach to

pulpy, "fat" leaves, but produces fibre with greater textile strength than that produced from richer lands, although fibre produced on the latter may be more flexible and longer in staple. Do not believe, however, that the idea, once so generally accepted, that sisal producing good grade fibre thrives best on the poorest soil is correct. Such an idea has been tried, and the results were just as disastrous as when the soil is over-rich and damp, producing a luxuriance of growth inversely to the poverty of the fibre. There must always be present suitable soil in sufficient quantity to start growth in a "comfy" manner and to enable the young plant like a child to build up some strength before it has to take up its true struggle for existence later on.

Water in excess is a great enemy of the plant. The plants, however, thrive well, perhaps best, if treated to spells of light rain. The moisture therefrom must never be allowed to remain in the soil near the plants.

Mr. Watkins apparently favours suckers, for he tells us that "when a plantation is fully established the most economical method of propagation, and the one invariably adopted in the Caicos Islands, is by suckers. If intended for propagation, these should not be removed until they have attained the height of at least 18 in. When planted out great care should be taken to plant the suckers in an upright position.

In Yucatan the plants are placed about 9 ft. by 9 ft. both ways, missing a row at intervals, and thus leaving a space of 18 ft. for carting away the leaves and doing transport work generally. Many of late have planted closer, much closer than this, even $4\frac{1}{2}$ ft. by $4\frac{1}{2}$ ft. and 4 ft. by 4 ft. Do what you like, however; if the plants are to flourish and give good fibre they must not touch. Even a sisal leaf-point moves slightly in the wind, especially the lower ones that stick out laterally, more so than the higher leaves do. This movement is enough to cause the spikes to scratch the leaves it touches, and cut them when younger and softer, so as to sever the fibrous tissues, and thus do harm to the crop. Besides, there is no need to plant closely; weeds, as a rule, are no trouble, as with maize, cacao, or other crop on richer and more productive soil. Weeds do come, except perhaps in Yucatan, but not sufficiently to make it worth while putting the plants so close that they will touch and cut each other when at full, or nearly full growth. Outside Yucatan, therefore, the weeds must be kept down so as to allow the young plants every chance, and even later, when the cropping stage is reached, a couple of weedings a year is generally to be recommended.

PLANTATION GENERAL MANAGER.—Thoroughly experienced in growing and milling rice, also similar irrigation crops, required at once for Madagascar. Must have sound business experience, knowledge of French, also engineering, an advantage. Free furnished quarters and passage. Applicants must state clearly age and salary required, also give full detailed synopsis of experience, and copies of reference to Box 381, Willings, Moorgate Arcade, London, E.C.2.

The Cultivation of Rice.—No. 10.

(Continued from August issue, p. 117.)

RICE-GROWING IN QUEENSLAND—continued.

WHEN we diverged into discussing rice and rubber in the Amazon Valley, as was done in July, we forgot at the time that we still had some notes on Queensland to be included, so will finish with these before we go off again to other centres.

Returning, therefore, to the *Queensland Agricultural Journal* (December, 1917), we would like to call our readers' attention to what is there said about preparing the land, setting out the seed, and also on prospects generally of the crop. The article concludes with the following telling little note by the Editor of the *Q.A.J.*, in which he tells us that the total annual production of rice in the United States of America, which, in 1866, was 2,000,000 lb., has now reached 350,000,000 lb. At 60 lb. (if paddy rice is meant) to the bushel, this means 58,000,000 bushels or thereabouts. It will take 8,000 large railway cars to handle the crop this season. Rice lands in the U.S.A. have risen from £2 to £8 per acre; hundreds of miles of irrigation canals have been constructed. Rice has been the redemption of the prairie lands of Texas and Louisiana. In ten years the worthless lands of these two States will produce the world's demand in rice. An acre there produces twenty sacks, worth from 10s. to 16s. per sack.

Although, according to the latest returns published, Queensland was, in 1916, producing no rice, she was a fair-sized producer twenty years ago, as in 1898 she grew 38,133 bushels from 863 acres = 344 bushels per acre. In 1899, however, she produced only 9,275 bushels from 319 acres, or 20 bushels to the acre. These 9,275 bushels gave 320,617 lb. clean rice, or 34½ lb. to the bushel.

If any portion of the Empire should be able to produce rice to feed its population it is Australia, but then this query must be answered in the affirmative: Can the rice be grown to pay from a political economic if not from a financial point of view? If the cost is not too heavy, the former reason to make Australia, like the rest of the Empire, self-supporting in every way must, in future, carry great weight in coming to a decision. Possibly with modern improved methods Queensland's poor yields since 1898 can be vastly improved upon, even such returns as 30 to 40 bushels of paddy, 60 lb. to the bushel, is not good enough to be satisfied with, and have been, according to Mr. Peek, whose name I mentioned in April, already been exceeded. In the Logan district only one crop per annum is obtained, but in more favoured districts, where no frosts give trouble, two crops can be taken off. With a good number of fair-sized farmers around turning out reliable yields of rice, a central milling plant could be erected and so keep all the profits in the hands of the producers. Doing so makes a great difference, especially in the leaner years. But the same as with sugar-making, if the central factory is to be run to pay, enough must be raised to keep the rollers constantly going. Every slack day means so

much less profit. It is a great pity, by the way, that engineers in England have not shown themselves more ready to supply rice millers with the necessary plant. All the literature we have on the subject, even when the rice is being grown and milled on British soil, speak of foreign machines being used, and yet, in the old days, we used to buy machinery very largely from English makers for friends in India. Refusal to spend money on advertisements (and we are not thinking of ourselves when we say this) has prevented growers from knowing who to go to over here, whilst in America there are a dozen or so firms who advertise freely, and the machinery mentioned in the *Q.A.J.* all came from America. One wonders why!

Whilst rice requires much water it cannot stand stagnant water; but then, what crop can?

The variety of rice most extensively grown in the Logan district in Queensland is known as White Java. This seems to have gained favour, as it gives a 4 ft. to 6 ft. high straw, is a good cropper, with a grain of good length, fairly plump, besides being, apparently, fairly free from disease and rust. A kind known as Aus or upland rice was also used, but a third kind, the Aman variety, did not give satisfaction, if for no other reason, because it has to be continuously submerged in not less than 2 in. or 3 in. of water. The grain also is brittle in harvestings and leaves the ear easily, so tends to be lost in the gathering to a considerable degree.

Leaving our readers to study the *Q.A.J.* in the original as regards harvesting, threshing, and milling the rice, we are borrowing the following notes, as published by Mr. Peek, regarding the preparation of the land and how to plant the crop:—

In preparing the land for planting, he tells us, ordinary methods only need be adopted—that is, to first plough, leaving the soil to lie for a week or so, to aerate and sweeten; then crossplough and harrow, bringing the soil to as fine a tilth as possible. In cultivating for rice on hillsides or sloping land with a natural rapid drainage, it would be advantageous to slightly terrace the land crossways to the fall of the hill, leaving an open catchment drain on the higher side, blocked at each end to conserve the rain water, because even so-called upland rice must have a certain amount of moisture, and by the construction of the above drain, or dam so to speak, the gradual percolation of the conserved water will have the desired effect of helping to supply the necessary moisture, which would be about 20 in. to 30 in. of rainfall spread over the period of growth. This rainfall has produced very good crops of fair yielding grain.

In sowing the seed we have to be determined as to our requirements—if for cropping for grain or for fodder purposes only. There are three systems: Broadcast chiefly for fodder purposes, planting in drills, and transplanting from nursery beds. In the first instance—i.e., sowing broadcast—it will take a bushel, or 60 lb. of paddy or unhusked rice, to the acre, the seed being harrowed and treated in the same manner as oats or wheat in the after-cultivation. But the plan most generally adopted, and by far the best, is planting the rice in drills 2 ft. 6 in. or 3 ft. apart, and about 10 in. to 12 in. between the plants, which

may be done successfully with an automatic seeder. By this method, about 35 lb. to 40 lb. seed to the acre are required. It also ensures the crop being more even and not so patchy as when sown broadcast, and allows a better chance of going through the crop with hoe or cultivator to remove any weeds that may have made their appearance before the rice has got fairly started. The system of planting in nursery beds and transplanting out is adopted chiefly in planting swamp rice or the Aman variety; but, as this system of planting entails a lot of labour, I do not think it will ever come into active operation in this State.* The mode of operations with this variety is briefly as follows: Beds are prepared according to the area to be planted; a bed about 20 ft. long and 6 ft. wide will be amply large enough to grow plants for a quarter of an acre, the beds being well made and enriched, so as to produce vigorous plants. Sow the seed and rake in carefully, watering at certain intervals. Care must be taken to keep the plants growing. When the plants are about 6 in. high they are ready for transplanting to their permanent beds, which is done by making holes about 10 inches to 12 inches apart in the rows and 2 ft. 6 in. between the rows. But, as before pointed out, this is a most tedious and costly mode of planting, and the labour involved is a serious item for consideration. You might as well try to transplant a field of oats or wheat in Queensland and expect to get a profit. So that it will be easily seen that planting in drills is at once the most economical and systematic, besides being the one most generally adopted. .

(To be continued.)

Castor Oil Production.—No. 2.

(Part I. See January, p. 6.)

SEEDS AND YIELDS.

THE Queensland notes, referred to last month, on the cultivation of castor oil give the most useful all-round details of how to go to work. These were in the issue of the *Queensland Agricultural Journal* for July. No mention, however, is made, as in the Consular report on the Philippines, which seed is best to use, Indian or local kinds.

In the *Agricultural News* of Barbados, however, the following particulars are given *re* yields, which may be some help in choosing the most suitable variety. It will be noted that the following table does not actually mention any Indian kinds by name, also one or other of the four numbers, or even the Zanzibari kind may be of Indian descent. This is what our Barbadian contemporary has to tell us:—

“ The yield per acre varies with the different kinds of seeds, and also with the type of land. In Madras, where over 500,000 acres are planted in this crop, the normal return in dry lands is 200 lb. to 300 lb. per acre, while in more favoured localities up to 700 lb. are obtained. In Texas and Florida yields as high as 2,700 lb. per acre are stated to be obtained, while

the average yield in the United States varies from 700 lb. to 1,600 lb. per acre. In Colombia 2 lb. per plant is stated to be the average yield, which appears to be somewhat high, 1 lb. of dried seed per plant being nearer the usual quantity."

The following table represents some yields obtained in the Leeward Islands in recent years:—

CALCULATED YIELDS PER ACRE IN POUNDS.

Variety				Antigua		Nevis	
				1911	1912	1913-14	1917
Ricinus communis	(major)	...	...	—	—	—	550
"	(minor)	...	...	—	—	—	460
Zanzibarensis	...	...	...	980	390	1,040	650
Native large	...	...	...	—	—	—	780
Native small	...	...	...	—	—	—	475
3,172	...	...	...	1,280	450	400	
3,173	...	...	...	—	420	360	
3,175	...	...	...	900	—	—	
3,176	...	...	...	780	330	460	

The yield varies greatly, but this may be partly due to seasonal changes. The rainfall in 1912, for example, was abnormally low, the average being 32 in., as against a normal average of 45 in. for forty-four years.

Two types of seeds, large and small, are met with usually in commerce. The large type yields a slightly larger percentage of oil, but the oil extracted from the smaller type is considered more valuable, and is especially used for medicinal purposes.

Recent examinations in the Government Laboratory, Antigua, of types of castor seed obtained locally, indicate the following oil contents in the whole seed (unshelled):—

	Percentage of oil
Small local type	49.0
Large white, slightly speckled seed	56.5
„ <i>Ricinus Zanzibarensis</i>	55.2
„ <i>Communis major</i> (brown) speckled seed	55.8

Madras, still quoting the *A.N.*, sends the bulk of her castor oil cake to Ceylon, where it is used as manure, and is highly prized both in India and in Ceylon as a fertilizer.

All speak of the wonderful vitality of castor seeds—quite a relief after having to do with hevea or cacao seed. Queensland tells us that in a tropical, even in a sub-tropical, centre the plant becomes a perennial. This is why we urged our readers in the first article to be sure and get the best seed as regards yield and oil-content. If the plants are grown as a perennial care must be taken, as we have always urged with coffee, not to allow the plant to run up too high and so get out of hand, as, when the time comes to gather in the crop, you want to be able to reach all portions easily. It wastes time to an important degree to have to stretch and strain to reach the taller branches, it also spoils the trees or bushes, and whilst a well-trimmed bush probably gives the most coffee or castor seeds in any case, even if the unpruned and pruned plants carried an equal number of seeds, it goes without saying that the stripping of the trimmed-back bush will be more complete and take less time than the taller ones, which soon reach an altogether inconvenient height.

(To be continued.)

* When it can be carried out however, it has always proved to be a great advantage.—ED. T.L.

Tobacco Planting—No. XLIX.

(Continued from January issue, p. 6.)

PLANTING EXPERIMENTS IN THE F.M.S.

As we agree with those who are urging the Straits Settlements and the F.M.S. not to put all their eggs in rubber only (nor to be so silly as to cut out assured rubber for speculative coco-nuts), but to plant sugar, coco-nuts, tobacco, &c., as well, we are including the following very full quotations from portions of a lengthy article by Messrs. D. H. Grist and J. N. Milsum in March, 1918, issue of the *Agricultural Bulletin* of the F.M.S. Those interested in the notes should, however, also refer to the original article, for there is much that we have been compelled to leave out, including carefully drawn-up tables. The entire article covered fourteen pages in the bulletin under the heading of:—

TOBACCO TRIALS IN THE F.M.S.

By D. H. GRIST AND J. N. MILSUM.

TOBACCO has long occupied a place in native agriculture, but only to a limited extent. Judged merely from the results of the native cultivation, the outlook for the successful production of the crop would appear to be distinctly unfavourable, but the native hardly ever thinks in terms of actual return for labour expended, is uneducated in the details of the art of the culture, and is handicapped by the dearth of good strains.

At the suggestion of the Chief Secretary, and with a view to stimulating the native culture, a comprehensive set of trials was made in 1917, having for its objects:—

- (1) The testing of the better strains of imported stock.
- (2) The isolation from them of strains likely to prove successful in this country.
- (3) The distribution of tested seed to native cultivators.
- (4) The education of the native in the details of culture.

A number of importations of seed from various tobacco-producing countries was made, the selection of these varieties and the collection of stock being in the hands of the Economic Botanist, Mr. G. E. Coombs, B.Sc., Federated Malay States, who made the following remarks:—

“The primary object was for trial against the native material and the isolation from them of strains which would prove of utility to the natives in different parts of the Peninsula. At the time the importations were made, it was realized that it would be impossible for some time to extend the work from the point of view of actually testing the crop from its commercial aspect. This, however, will be done as soon as it is possible to develop the scheme of experimental farms, now under consideration, and in the meantime work will be prosecuted on a small scale.”

The trials of which this report deals were carried out at Kuala Tembeling, Pahang; and at Juasseh near Kuala Pilah, Negri Sembilan. The tests were, therefore, conducted on two entirely different types of soil.

The land selected at Kuala Tembeling was a portion of the area of volcanic, probably andesite origin, on the Kuala Tembeling Government Plantation. That at Juasseh was on land typical of such an extensive area in this country, composed largely of laterite. It may be pointed out in passing that the constitution of the soil in which natives would have to plant tobacco more nearly approaches the Juasseh type than the Kuala Tembeling, which latter is peculiar to but a small proportion of the country.

The land at Juasseh was newly felled and cleared land, and at Kuala Tembeling land that had been cleared for some years, but had been fallowed.

The average figures of the most important soil constituents in the tobacco districts of Sumatra are instructive.

ANALYSES OF SUMATRA V.F.M.S. TOBACCO SOILS.*

Place	Nitrogen	Phosphoric acid	Potash	lime
Deli ...	0.245	0.12	0.06	0.28
Langkat ...	0.22	0.17	0.13	0.15
Serdang ...	0.187	0.115	0.17	0.20
K. Tembeling	0.115	—	0.425	—
Juasseh ...	0.126	—	0.320	—

It will therefore be seen that the Kuala Tembeling soil compares very favourably with the best tobacco-producing soils in Sumatra, with the exception of the nitrogen, but that the soil at Juasseh is distinctly inferior as regards nitrogen, and more especially in its phosphate content. The Kuala Tembeling soil is very fertile, and as regards its suitability for tobacco cultivation, it is considerably above the average of soils met with in the Malay Peninsula.

The rainfall at Kuala Tembeling was 88.34 in., or about an average of $7\frac{1}{2}$ in. per month, and Juasseh 97.33 in., or just over 8 in. per month. This was for the year 1917.

The average rainfall at Kuala Tembeling for the last four years (1913-1916) was 84.06 in. This is somewhat below the average in many parts of the country. Light rain, continuing the greater part of the day, is frequently experienced. This, combined with the very fertile soil, results in conditions favourable for tobacco growing. In this connection some difficulty was experienced in harvesting the tobacco crop, as not only were the plants in rather a soft condition, but also, moisture was usually on the leaves during the greater part of the day, under which conditions leaves should not be plucked for drying.

At Juasseh the weather conditions are entirely different. Very heavy downpours of rain are usually succeeded by spells of hot dry weather. The abnormal rains experienced in May resulted in an entire crop of newly transplanted tobacco being washed away.

The following tobacco varieties were imported by the Economic Botanist, Federated Malay States, and handed over for trial at these centres. Subsequently, a further consignment was received from Burma, but the present report deals with those varieties received in the first instance, for the trial of the Burma tobacco was carried out at Juasseh, but the crop failed in the nursery. The germinating capacity was satisfactory,

* Mathieu, *Sumatra Tobacco*, 1908.

plants of all varieties, with the one exception of the White Burley, which failed at Tembeling, were successfully raised and transplanted. The varieties experimented on were as follows, with country of origin in brackets: Turkish cigarette, Dumbara, White Burley, U.S.A., Sumatra, Zimmer's Spanish cigar filler (Ceylon); Bernang and Repollo, "A 11 (Philippines); Type 28 (Pusa, India); an unnamed variety from Coimbatore, S. India; Ilathi and Godvari Lanka (Anakapillai, Madras); Gandin and Peelin (Gujarat, India); and two unnamed kinds from Klaten and Kanari in Java.

One of the above varieties, the Gandin from Gujarat, failed at Juasseh, and the last two unnamed kinds have been grown at Kuala Pilah only, the maturity stage of these two varieties not having been reached at Kuala Tembeling.

Though the cultural methods of tobacco are well known, it may be that a detailed account of the methods adopted in the present trials may be of interest. These methods are in all probability almost identical with those practised by the native cultivators in Ceylon; but they vary very considerably from that adopted by the Malay cultivator.

The labour employed in these trials was, at Tembeling, Tamil under a Ceylon Tamil mandor, who had had experience in tobacco growing in his native country; and at Juasseh the coolies were all Chinese, under the supervision of one of the writers.

(To be continued.)

Lord Leverhulme as an Author.

THE head of Messrs. Lever Bros., Ltd., Lord Leverhulme, has contributed a book on the labour question—we should imagine a very useful book too—entitled: "The Six-hour Day and Other Industrial Questions," with an Introduction by Lord Haldane. Published by Messrs. G. Allen and Unwin, and edited by Mr. Stanley Unwin, the book runs into some 330 pages and starts with a saying typical of its author, "It was never the Creator's intention to send us into the world as so many 'hands.' He sent us with imagination. He sent us with love of the country. He sent us with ideals and outlook, and these are simply stifled under the present industrial system."

We do not challenge Lord Leverhulme's statement as to the stifling effect of our present industrial system on the imagination and ideals of the individual in this country. Since he has told us of this we are quite sure that it is true—if the individual has not already had those desirable qualities already smothered inside him, or pushed outside of his or her mind by our present system of education which teaches us nothing, compared with what the people of a world-wide country wants to know. It fills us, apparently with that which neither helps us as we grow older to plant a potato at home, or to realize what others are doing for our trade and "tummies" out abroad.

Planters should be interested in this book. If the principles discussed were put into practice the manufacture of tropical products, rubber, coconut and other vegetable oils, cacao, fibres, &c., could be greatly developed on this side to the advantage of the producers. Already, as is known to many, one of the leading importing firms

of West Coast of Africa cacao, has secured the control of a well-established cacao factory and so will now be able to make up their own cacao when the bids are too low. There are many producers and exporters in the Tropics who would be well advised to study what Lord Leverhulme has to tell them and then either invest in shares in the best known and best managed concerns over here, or, failing that, start co-operative works between themselves. Large profits are undoubtedly made out of tropical produce by those who handle the shipments after they leave the estates. As shareholders in a co-operative, co-partnership manufacturing concern, planters would secure their share of these profits, which now go to the pockets of everyone but themselves.

DISCUSSING the débâcle in Germany, *Wileman's Brazilian Review* said that nothing could be more significant of the breakdown of Germany than the voluntary renunciation of her designs on South America, about which the President of the State of Rio Grande do Sul, Dr. Borges Medeiros, could, if he chose, make some interesting disclosures.

Now that the grapes are sour, nothing, of course, could be farther from the thoughts of any German than an infringement of the Monroe Doctrine. But "Once bit twice shy" will be a good motto when the trade relations of Brazil with Germany come to be settled at the Peace Conference. So, to make sure, before very long we may expect, as we hope, to see that the German banks will be put into liquidation, and "peaceful penetration" be a thing of the past so far as Germans are concerned.

(Continued from p. 24.)

daily newspaper, which was subsequently acquired by the Harmsworth Syndicate, and was later associated with the "Evening News." Colonel Holbrook has been for many years a member of the Council of the Newspaper Society of the United Kingdom, and was President of the Society in 1913-14. Since that date he has represented the Newspaper Society as a member of the Admiralty, War Office, and Press Committee, and has been elected a Fellow of the Institute of Journalists.

"Our Friend" commenced his military career so far back as September, 1860, when, as a boy, he was attested a member of the 5th Hants (Portsmouth) Rifle Volunteer Corps. Joining as a drummer, he served seven years in the ranks of the Corps. He was gazetted to a commission in August, 1874, and passed through the various grades of commissioned rank in the battalion, which subsequently became the 3rd (Duke of Connaught's Own) Volunteer Battalion the Hampshire Regiment, and is now the 6th (D.C.O.) Hampshire Regiment. Gazetted lieutenant-colonel and honorary colonel in January, 1893, Sir Arthur, five years later, succeeded the late Colonel Arthur Perkins as commandant. He was the first commanding officer appointed under the regulation limiting the period of command to four years, but at the request of his officers accepted an extension for another two years, retiring in 1904. He commanded the 3rd Hants during the South African War, and then raised six new companies, bringing the total strength to eighteen companies. The battalion contributed more than its quota of Hampshire Volunteers sent out to the war in the active service section.



"Tropical Life" Friend. No. 164.

COLONEL SIR ARTHUR HOLBROOK, K.B.E., V.D., D.L.,
VICE-CONSUL FOR BRAZIL, PORTSMOUTH.

IF time, i.e., if his duties permit, "Our Friend" this month has promised to send us some notes on the future of Anglo-Brazilian relationship in the near future, as well as further ahead.

We got into touch with Sir Arthur Holbrook, as Vice-Consul for Brazil, through the introduction of the Acting Consul-General in London (Mr. H. H. de Vasconcellos), but we, like everyone else, knew "Our Friend" very well by name for several reasons; first as a fellow journalist and editor, then as a strenuous and leading citizen of Portsmouth and worker for the Empire at large, and third and lastly, but not least, as the father of "Dardanelles" Holbrook, i.e., Lieut.-Commander Norman D. Holbrook, R.N., who was awarded the V.C. for having dived under five rows of mines in the Dardanelles in December, 1914, and sunk the only Turkish battleship.

The family is a-fighting one "all sides as well bottom and top," as the coolie said when trying to describe the intricacies of a family feud in a tropical police court. When Mr. Vasconcellos went to Portsmouth to appoint a Vice-Consul for Brazil he chose well. Determined to be satisfied with nothing short of the best, he chose slowly but surely and his choice is a good one.

Taking "Our Friend" first: On the outbreak of war Sir Arthur Holbrook was invited by the War Office to take over duty as Field Officer in Charge of Supplies of the Salisbury Plain District. He responded to the call, and was gazetted temporary lieutenant-colonel in the Army Service Corps on August 12, 1914. In December of the same year he was given command of the Army Service Corps in the Salisbury Plain District, and still holds that position. The charge is by no means a sinecure, as six counties are comprised in the district, viz., Wiltshire, Berkshire, Buckinghamshire, Oxfordshire, Worcester-

shire, and Warwickshire. "Our Friend" is the senior of about 6,000 temporary officers who have joined the Army Service Corps since the commencement of the war.

Six of his sons are employed on active service. Lieut.-Colonel A. E. Holbrook, D.S.O., A.S.C. (who served in the South African War in the Hampshire Regiment), is A.A. and Q.M.G. of a division in France, and has been four times mentioned in despatches. Commander L. Stanley Holbrook, M.V.O., R.N., was flag commander of the second flagship, King George V., in the Battle of Jutland. Lieut.-Colonel Claude V. Holbrook, A.S.C., has been transferred from the War Office to the Ministry of Munitions as Director of Army Medical Transport. Lieut.-Commander Norman D. Holbrook, R.N., was awarded the V.C. for having dived under five rows of mines in the Dardanelles in December, 1914, and sunk the only Turkish battleship. Captain Alec W. Holbrook, Royal Engineers, served in Gallipoli, Egypt, and France, and was badly gassed in France, but has since returned to the front and was awarded the M.C. for gallantry in reconnaissance work. Lieut. N. Worsley Holbrook has just completed his training at the Royal Military Academy at Woolwich for a commission in the Royal Garrison Artillery. He served with a heavy battery in France during closing months of war and is with the Army of Occupation in Germany. Sir Arthur Holbrook's eldest daughter married Acting Captain R. Lindsay Nicholson, R.N., who served on Admiral Sir J. Jellicoe's staff in the Iron Duke at the Battle of Jutland as Fleet Wireless Officer of the Grand Fleet, and was promoted to commander and awarded the D.S.O. for his services. Captain Nicholson has been recently appointed a member of the new naval staff at the Admiralty as Director of Signal Division, and is the youngest officer on the staff. Colonel Holbrook's other three daughters are engaged in the supervision of Army Canteens on Salisbury Plain. Colonel Holbrook's seventh son, Mr. H. Leslie Holbrook, who died in October, 1912, was a lieutenant and Maxim gun instructor of the 6th Hampshire Regiment.

Our Friend married in 1878 Amelia Mary, daughter of the late Mr. Alexander Parks, of Ortaquey, Southsea, and of Constantinople. Lady Holbrook has been residing on Salisbury Plain during the greater period of the war.

Apart from his military duties Colonel Holbrook has led a busy and useful life. He was educated at the Portsea Diocesan School, the respected principal of which school (Mr. Jeremiah Andrews) was responsible for the training of many of Portsmouth's best-known public men. He joined the staff of the "Portsmouth Times" at an early age, and later was received as a partner in the firm of Holbrook and Sons, the well-known publishers. The management of the concern devolved upon him in 1878, on the death of his brother, Mr. E. G. Holbrook, and upon his shoulders fell the burden of the final stages of the historic libel case, the Queen v. Holbrook, which was before the Courts for two years, and in which the defendants were twice convicted under a criminal prosecution at the Hants Assizes. Their appeals against the convictions were in each case successful, and they established, as a principle in law, that proprietors of newspapers cannot be held criminally responsible for libels inserted in their papers without their knowledge, authority, or consent.

In January, 1885, he founded the "Evening Mail," a

(Continued on p. 23.)

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 88-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—Changes of address should be promptly notified.

7.—Non-receipt of copies of the Journal should be notified to the Publishers.

8.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

FEBRUARY, 1919.

Brazil as an Ally.

BY H. H. DE VASCONCELLOS, F.R.G.S.,
ACTING CONSUL-GENERAL FOR BRAZIL IN LONDON.

IF only Brazil had been free to act in this war in accordance with the conscience and liberal character of her people, some hundreds of thousands of our citizen soldiers would have taken an active part in the fight in France, or at some other battle front. I say this because the nation, almost unanimously inspired by the mentality of France, often tried to exercise pressure towards an immediate direct participation in the war in the early days of our entry into the conflict. Fortunately the statesmen who were at the time charged with the guidance of our affairs were led to study the vital necessities of our allies as well as our own.

"With France to the death" was a war cry that appealed to the heart of a nation like Brazil, bound to France as she is by links of blood and tradition. With her, until victory was attained, was the hope of a people in full sympathy with France for her sorrows since 1870, for we have always felt that the French people have ever been the foremost champions of the cause of human liberty, and, as now, have always suffered and endured the greatest possible ordeals for sacred and just causes.

When Germany started the war in 1914, the very soul of Brazil cried aloud for the aid of Britain, convinced that, if no reason existed in reality for her participation in the struggle on the side of Belgium, of Serbia and of France, one would have to be found to justify the

succour she alone could give to save these nations from perishing under the brutal attack of a ferocious enemy, prepared to pounce upon and destroy her neighbours summarily and permanently.

The sense of relief that made itself felt throughout the world at Britain's decision on that memorable Fourth of August was nowhere more intense than in Brazil. We knew that the iron grip of the British Navy would prove indomitable.

We were heart and soul with our cause; ready to make every sacrifice for the permanent attainment of the aims of civilization and for the restoration of all that which has been destroyed; convinced that Great Britain and the United States would not entertain any idea of peace until they were convinced that the small but glorious countries, whose peoples had trusted them, would be assured of that compensation which they deserved for the sacrifices they had made and the sufferings they had endured.

Towards that end we were anxious to pay, collectively as a nation, the tribute of blood and life, that was voluntarily paid by many of our countrymen, who joined the Foreign Legion in France, and who, by the side of the sons of every nation, have gone to form the anonymous heroes whose deeds will ever live to immortalize the just cause of right, freedom and justice.

We were not at liberty, due to circumstances independent of our will, to do what we pleased in the war, except in producing all we could to supply the Allies with raw materials and with food, and, to help us to do this, we concentrated all our goodwill and energies. But, when the slightest indication was given that we might do anything more to foster the interest of the war we eagerly answered the call. In time to come, when our small contribution becomes known, there will be no reason for us to be ashamed of our effort; our fleet relieved the American and British warships in the South Atlantic; our Government was aware of the possibilities of our co-operation on land; our airmen came to England and France to help.

Believers in the theory that an eye should be demanded for an eye and a tooth for a tooth, as being the only means to bring to his senses a recalcitrant enemy, yet it is fully recognized that the war record of Brazil is a very clean one.

The few wars we have had to wage have always been for the liberation of our neighbours from the oppression of their rulers. The theory of no annexations or indemnities has always been practised by us, as students of the history of Brazil know.

To-day we are convinced of the possibility of a permanent peace and the practical abolition of war; also that the settlement of international dissensions should be as easily adjusted by arbitration as the quarrels of private individuals in a Court of Law.

We have on our own initiative created an unexampled diplomatic precedent by settling by arbitration all our boundary questions with our neighbours, without waiting for the general accord of nations for the adoption of the principle that is now maturing under the popular term "League of Nations" or "League of States."

Universal peace is generally considered as Utopian; it is nevertheless realizable if a permanent alliance of the Anglo-Saxon and Latin races can be cemented and preserved.

British perseverance, American determination and Latin confidence should produce an indestructable amalgam powerful enough to enforce obedience to law, respect for right and justice, and devotion to liberty throughout the world.

Under such conditions the prospects of the American Continent are favourable beyond measure, with only two races, three languages and one ideal.

"The Rubber Industry of the Amazon."

LIKE all papers, we owe much to kindly friends and helpers abroad—men and women—who help without being asked, and who do it in the most unexpected fashion and from unlooked-for corners. Here is an instance:—

"My dear Sir,—I beg to call your attention to a book of special interest and value which has been published since the outbreak of the war. It is entitled 'The Rubber Industry of the Amazon and how its Supremacy can be Maintained,' by J. F. Woodroffe, and edited by Harold Hamel Smith, Editor of TROPICAL LIFE. It is published by John Bale, Sons and Danielsson, Ltd., Oxford House, 83-91, Great Titchfield Street, Oxford Street, London, at a price somewhere about seven or eight dollars American gold.* I regard this as one of the most important studies of tropical agricultural policy ever published. It is bound to be of the greatest interest and use to all who are interested in the agricultural development of any tropical country. In no work of recent years has it been made so clear that the welfare of the tropical countries must depend upon the welfare of the labouring people of the country. It is also a study of supreme importance of a country having all of the possibilities for greatness, waging a most desperate fight for economic freedom under almost overwhelming difficulties which have been brought about entirely by its own public officials and business men. To those of us who are intensely and vitally and permanently interested in the progress and welfare of the Tropics—the future food reservoirs for the whole world—this work must be considered as a most necessary tool for our chosen business. I would most earnestly recommend it to your serious attention.

"Very respectfully,
"C. F. BAKER,
Acting Dean."

"F. W. Carpenter, Esq.,
Governor of the Colony,
Wamla, P.I."

"My dear Dr. Baker,—I thank you for your favour of the 4th instant bringing to my attention the book entitled 'The Rubber Industry of the Amazon, etc.' On your suggestion I am to-day sending for the book, and also subscription for TROPICAL LIFE.

"A thousand thanks for your courtesy in bringing so important a book to my attention.

"Sincerely yours,
F. W. CARPENTER."

"Dr. C. F. Baker,
Dean of the College of Agriculture,
Los Banos, La Laguna, P.I."

Mr. J. C. Huson, of "O Espelho" and the Brazil Press Association, Ltd., also has taken an interest in the above book, which has become well-known, and whose influence has spread over a wide area. When asking for a copy of our January issue, Mr. Huson adds a couple of lines to say that he is instructing his bookseller to send him a copy of "The Rubber Industry of the Amazon."

The Brazilian Naval Ships at Portsmouth.

A section of the Brazilian Navy, viz., a light cruiser, four 27-knot destroyers, together with the transport "Belmonte," arrived at Portsmouth during the last week in January, and was received, and the officers entertained, by the naval and civic authorities.

The squadron was under the command of Rear-Admiral Pedro de Frontin, flying his flag on the "Bahia," whilst the four destroyers were the "Piahy," "Sta. Catharina," "Parahyba," and the "Rio Grande do Norte." Built by an English firm, Sir William Armstrong and Co., at Elswick in 1910, the "Bahia" is described by the *Portsmouth Times* as being a fast little scout of 3,100 tons displacement, armed with ten 4.7 guns, three six-pounders, and two 18 in. torpedo tubes.

After being entertained at Portsmouth, Rear-Admiral de Frontin and his staff proceeded to London, and were the guests of the Admiralty. Among those who received and entertained the Brazilians at Portsmouth were the Commander-in-Chief (Admiral the Hon. Sir Stanley Colville, G.C.V.O.), and his deputy (Flag-Captain Stirling), Colonel Sir Arthur Holbrook ("Our Friend" this month), and a long list of other leading men.

At the luncheon at Portsmouth, given in honour of the event, the Mayor, when proposing the health of "The President of the United States of Brazil," said he was sure that his colleagues and others who were privileged to attend that little function felt that it was an honour to be allowed to have with them that day, as their guests, the representatives of such an important country. Apart from the standing of Brazil from a commercial point of view, they all knew that to-day Brazil was one of our Allies. It was over twelve months ago that the Brazilians declared war on Germany, and they were at Gibraltar when the Armistice was signed. Had the war gone on, they knew that the Brazilians would have rendered good service to the Allies. (Hear, hear.) After the signing of the Armistice the Brazilian Squadron proposed to return to Rio—one of the finest harbours in the world—but the King felt he would first like them to come on to Portsmouth. They accepted that as an honour. (Hear, hear.) They had been privileged on previous occasions to entertain foreign fleets, and they cordially welcomed the Brazilians that day, and trusted that they would have a pleasant time, and their visit to Portsmouth would be a landmark in their lives which they would look back upon with pleasure. (Applause.)

Colonel Sir Arthur Holbrook, who replied, said that in the absence of the Consul-General, Mr. Vasconcellos, the duty devolved upon him, as Vice-Consul, to ask them to drink the health of His Worship the Mayor. He desired, on behalf of the Brazilian Consulate, to offer to His Worship their sincere thanks for the splendid entertainment he had given them that day. It would be

his honour to declare peace, and in this connection they would welcome the time when they would be able to renew commercial associations with our Allies, and particularly our latest Ally, the United States of Brazil. Since his (Sir Arthur's) appointment as Consul he had naturally looked into the extent of the resources of Brazil, and he must confess that what he had found had astonished him. It was probably in its resources the richest country in the world. They heartily welcomed the representatives of that great country, and they were glad to feel that one result of the war would be the promotion of better commercial relations with Brazil and all its wonderful resources. (Applause.) They would be able to build up a trade with Brazil that would, he thought, benefit all parties concerned. (Applause.)

The Freight Question.

HAVE RATES BEEN LOWERED BY BEING RAISED?

Since so many papers of late have been telling us of the "cut" in and lowering of freights, we could not but feel that what so many of them had said must be true, and yet—but we did not wish to be critical and so came to the only conclusion possible, which was that freights in some instances had been lowered (since we were told so often that they had been) by being raised. This may sound rather Irish, but so long as it is true what matters?

Evidently one of our leading Government authorities is of the same opinion for, in an excellent article contributed by him (i.e., Sir Leo Chiozza Money, late Parliamentary Secretary to the Ministry of Shipping), to the *London Observer* of February 2nd, he says all we thought and more. Here are some extracts under the heading and sub-headings of "The Truth about Freights—Not Lower but Higher—A Chapter of Strange Misunderstandings."

"In the daily Press of the last week or so the fortunate reader has encountered many such statements as the following:—

"To promote trade from the U.S. and Canada freight rates have been cut down to less than one-third—from 3 dollars 50 cents (about 14s. 7d.) per ton weight to 1 dollar (about 4s. 2d.); and from 1 dollar 75 cents by measurement to 50 cents. The new rates are now in operation.'—*Daily Mail*, January 27th. (A subsequent Press correction gave the rates per 100 lb., not per ton, which is right.)

"Big Fall in Freights.'—*Evening Standard*, January 27th.

"High War Freights. After the liner system of requisition by the State came into effect, early in 1917, freights were advanced to a very high level.'—*Times*, January 27th.

"The drop in freights. . . . They mark a notable step in the return to peace conditions, and should cause all imported goods to become cheaper as well as more plentiful.'—*Daily Mail*, January 28th.

"The big cuts in the North Atlantic and Indian rates of freight.'—*Daily News*, January 28th.

"When, during the war, the liners came under State requisition and freights were raised, for account of the Government, to a very high level.'—*Times*, January 30th.

"As a matter of hard and cold fact, all these statements, which I have taken impartially from organs of all shades of opinion, are either inaccurate or misleading. So far from the new freight rates announced by the North Atlantic Conference being low as compared with the Government freights charged by the Ministry of Shipping, they remain, after the cut, much higher than those Government rates. The Press has been badly hoaxed in the matter, and in its turn has innocently misled the public. It has been a spectacle in one sense amusing, in another sense sad. The public is told, in effect, that the State Shipping Department charged them high rates, and that the liner companies are reducing those rates. A more misleading impression could not be imagined. As soon as the submarine attack ceased and costs fell, the Government rate was reduced. It was reduced so substantially that the new North Atlantic Conference rate, announced with a flourish of trumpets as a big reduction, is much higher than the Government rate now actually operating for stores carried for the nation.

"What, then, does the cut mean? It simply means that it is a cut, not as compared with the Government liner freight rate, but as compared with the commercial rates on the very small proportion of private cargo which the Government allowed to be carried when the space was not needed for Government account. In the first six months of 1918, for example, 94 per cent. of our imports were for Government account and carried at cost.

"Why did the Ministry of Shipping then allow and instruct a higher rate to be charged on the very small proportion of private cargo? For a very good reason. If the department had carried at cost for the private merchant as it did for the public, the merchant (sometimes not even the merchant here, but overseas agents) would have appropriated the margin and the public would have gained nothing. This was explained by me in the House of Commons on February 18th, 1918.

"All the talk about food prices coming down through the alleged 'cut' is nonsense, for the cut private rate is higher than the existing Government rate. Fortunately, food is still carried for the Ministry of Food at cost by the Ministry of Shipping, so that the high 'cut' rate will not raise the price of food.

"But the nation has no protection for the future in view of the projected release from Government control of food and raw material buying, and of ship freights. Anything may happen. But I know what ought to happen.

"Ships, no longer deprecated by submarines, are rapidly increasing in numbers, both here and abroad. British and American shipyards have an enormous capacity. Therefore the price of freights ought to fall heavily in the near future. Shipping rings, however, will be in a position to keep them well above the cost line.

"So far I have spoken in general terms. Let me in conclusion dispose of the great freight hoax by the following somewhat curious figures:—

NORTH ATLANTIC FREIGHTS.

(a) Government Cost Freight Rate:

		Per Ton Weight.
		s. d.
April, 1897...	...	40 0
January, 1918	...	82 6
December, 1918	...	42 6

(b) New "Cut" Commercial Rate (!):

January, 1919	...	93 4
(4s. 2d. per 100 lb.).		

So that the new North Atlantic freight rate, heralded as a 'fall in freights,' is 50s. 10d. per ton more than the now existing rate paid by the Ministry of Food for Government food imports, and 10s. 10d. more than the Government rate existing when the submarines were sinking ships every day.

"Millions of people have been led sadly astray by the shipowners in this matter, and the Press has been made the innocent victim of conveying a great illusion. I earnestly hope that the Press will now help to put the matter right, and I waive my right of copyright in this article to enable it to convey the truth to its readers."

Thus has written Sir Leo Chiozza Money who was, as has already been stated, Parliamentary Secretary to the Ministry of Shipping. He would therefore write with knowledge of the case from within but writes of course, for that very reason, with a strong bias in favour of the Government. What have the big shipping firms got to say in reply? Who will tell us the much-sought-after but so very evasive truth?

We are more pleased than ever that we called attention to the state of freights generally last month, especially on account of the hopeless uncertainty as to what lies ahead of us. Mr. Jack Walker's humorous cartoon as the head of the notes also played an important part, by diverting, as it was put there to do, everyone's attention to the notes underneath. Whoever else received copies we know that the Shipping Controller and seventeen of the leading men in the shipping world over here did, and also the managers of forty-five leading lines or agencies. TROPICAL LIFE has, therefore, we feel "done it's bit," and done it, we trust, in a way that has done our trade some good and no person any harm.

CONGRATULATIONS to our Houston (Texas, U.S.A.) contemporary, the *Peanut Promoter*, on its anniversary issue for December. It is as bright to look at as it is useful to have by you, if you are interested in ground- or pea-nuts. Such a trade organ is badly wanted, we trust, therefore, that the *Peanut Promoter* will have a long life and an ever-expanding circulation.

Trade, Politics, and Finance.

WE must curtail these notes as we have given up so much space to the question of freights, as we know that it is the most important matter that we have to contend with at the moment. Getting to work straight away, therefore, we have to report that further reports confirm the statements made some weeks back that the estimate of the present Cuban sugar crop has been put at over four million tons (4,016,000 to be exact), against actual outputs of 3,600,000 tons in 1918-19, and 3,446,000 in 1917-18. The present crop estimate is subject of course, to favourable climatic and labour conditions. According to Messrs. Willett and Gray's estimate, the world output of cane-sugar works out at 12,300,000 tons, against 4,306,000 tons of beet. Reviewing their local copra market for 1918, returns published by the *Times of Ceylon* show the great fluctuations that have taken place, and also the low value to which prices fell owing to the absence of tonnage. Starting in January (1918) at Rs. 32 (R. = 1s. 4d. about) per

candy (about $\frac{1}{4}$ ton, or 560 lb.), the price rose to Rs. 37.50, and then, in February, dropped to Rs. 35.75, and rose to Rs. 44. After many fluctuations it stood at Rs. 43.75 cts. in June, about Rs. 45 in August, whilst on September 11th it stood at Rs. 50. In October Rs. 75 was touched, and before November had passed Rs. 80 and Rs. 72.50 were reached, but the record came on December 6th with Rs. 88.50. The middle of that month, however, saw Rs. 82, and at Christmas it stood at Rs. 74 to Rs. 76, against offers of Rs. 75, less Rs. 2 per candy, amount of the new export duty, now in force to be paid by the exporter.

Against these rates our West Indian Island closed the year with selected nuts, in bags of 100, f.o.b. Port-of-Spain, the chief town, at \$53 (\$ = 4s. 2d.) and culls at \$25, as compared with \$7.10 cts. for copra per 100 lb. and \$1.50 per gall. for oil, cask included. The exports from Trinidad compared as under:—

Jan.-Dec		Coconuts		Copra (bags)
1918	...	22,074,295	...	30,891
1917	...	16,938,010	...	41,647
1916	...	20,048,010	...	22,369
1915	...	13,144,759	...	23,518
1914	...	15,001,698	...	14,728

Much has been said about the uselessness, even of the detriment to the welfare of this country, of the present House of Lords. Those, however, who have carefully studied Lord Emmott's, Lord Leverhulme's, and the other speeches on labour and wages in the London papers of February 20th, must own that their remarks, at any rate, were very practical and extremely useful.

WE learn that nitrolim is once more available for export to India, Ceylon and the Colonies. This nitrogenous fertilizer, which was making rapid headway up to and during the early days of the War, was virtually commandeered to serve as raw material for high explosives, and it is only now that supplies are again available for tropical agriculture. The serious shortage of fertilizers, particularly those supplying nitrogen during the War, makes it imperative that every effort should be made to restore exhausted soil fertility, and we have no doubt that the reappearance of nitrolim on the market will receive a hearty welcome.

Apropos of this we have received from Nitrogen Fertilizers, Ltd., an exceedingly interesting booklet entitled "Harnessing the Hottest Heat to the Coldest Cold," being a reprint of an article written by Frederick A. Talbot for the November issue of the "World's Work." It deals, in non-technical language, with the rise and development of the fixation of atmospheric nitrogen industry and its relationship to agriculture, an industry the romance and importance of which are unsuspected by the general public. Truly thrilling is the story of how the boundless energy of the snows and rivers of Norway has been converted into the devastating energy of modern high explosives to repel the invading Hun, and how the inert nitrogen of the air is charged into active food for crops. The booklet can be obtained free on application to Nitrogen Fertilizers, Ltd., Winchester House, Old Broad Street, London, E.C.2, and we commend it to our readers.

This reminds us that Nitrogen Products and Carbide Co., Ltd., are going ahead with an ambitious and highly commendable scheme for establishing the carbide and nitrolim industries in this country. It is

announced that a colliery has been purchased at Workington in Cumberland and that the coal is to be carbonized on the most up-to-date lines so as to obtain the valuable by-products for conversion into intermediates for synthetic dyes and drugs, the gas and coke being used for generating electric power for carbide and cyanamide (nitrolim) manufacture. This is the first serious attempt on a commercial scale to establish the nitrogen from the air industry in this country, and we wish it every success.

Moving across to Kuala Lumpur, F.M.S., it is a pleasure to see that our old friend and contemporary, *Grenier's Rubber News*, goes as strong as ever. In its issue of December 28th, p. 157, we were glad to see that the leader from ours for September on "The German Trade Octopus" had been reproduced in a way that leads one to believe that our contemporary fully approves of all we had to say regarding the big rises given to non-wealth producers over here, whilst the main wealth producers, i.e., the planters and those dependent on them, have often been hard hit over the War unless producing sugar or those crops which have not been so vigorously restricted in price, especially in comparison to the freights that the produce had to pay.

Coming to London produce market gossip, the markets, the *Public Ledger* very truly says, owing to the great labour unrest and the laxity of the Government in granting licences for exports, have been, as a consequence, exceedingly quiet, and prices with scarcely any exception have shown a further downward tendency. Rubber, however, after slight fluctuations, closes steady and dearer, but this was on the receipt of news of higher prices in America, which, with the orders about, caused a rise of 1½d. to 2d. per lb. Although a portion of this increase was lost the market was stronger, and closed on February 7th at 2s. 1d. to 2s. 2d. for Standard No. 1 crêpe and 1s. 11d. to 2s. 1d. for smoked ribbed sheet, against 2s. 6d. per lb. for fine hard and 2s. 2d. for soft fine, with caucho ball at 1s. 8d. and balata at 3s. 9d. for West Indian, 3s. 3d. to 3s. 4d. per lb. for Venezuelan, and about 2s. 8d. to 2s. 11d. or 3s. for Panama and Tumaco. Cotton closes (against 15.57d., April delivery, quoted in our December issue) at 16.65d. for February, and 15.07d. for March, and 13.86d. in April for good middling. Manila hemp is worth £150 per ton for Class B. and £130 for C., down to about £90 for G. and £85 for H. East African sisal, £99 for No. 1 and £97 for No. 2 quality. Cebu Maguey fibre is quoted (February 8th) at £70 for No. 1 and £68 for No. 2, against £68 for No. 1 from Manila and £66 for No. 2. Against these good fair New Zealand hemp is worth £99. It is a little difficult to follow the maximum prices of copra, since they seem to change. On February 8th, however, all kinds were put at £33 to £34, against £50 for crude coco-nut oil. Copper is now at £75 to £77, and tin under £240 per ton. T.N. Orange shellac is quoted at 250s. to 260s., and A.C. Garnet about 270s. There is more coffee about, but the demand is good and prices steady. The total Brazil receipts stood at 6,126,000 bags, against 11,007,000 in 1917, and 10,109,000 for 1916-17, and 12,314,000 bags in 1915-16.

The following is a comparison of the principal points

in the returns of the Bank of England at the present time and in the corresponding week last year:—

February 8th	1919	1918
Bank Bullion ...	£81,443,667	£58,609,501
Reserve of Notes ...	28,924,195	29,796,285
Private Securities ...	83,469,813	96,893,646
Notes in Circulation ...	69,986,695	46,131,315
Rate of Discount ...	5 per cent.	5 per cent.
Price of 2½ % Consols...	59½	54½
Price of Bar Silver ..	48½d.	43d.

The Council of the Royal Colonial Institute have "earnestly requested His Majesty's Government not to give their final consent to any agreement which will leave any opening for doubt as to the future of the late German Colonies. In particular, they venture to urge that the ownership by the Commonwealth of Australia and the Dominion of New Zealand of the Pacific Colonies occupied by their respective forces during the War, and the ownership of German South-West Africa by the Union of South Africa, should be confirmed to those Dominions as an accomplished fact beyond all possibility of question. They would suggest that any supervision on the part of an international body should, at most, be restricted to general rules similar to those which have been laid down from time to time at International conferences with regard to Tropical Africa, and which, so far from invalidating the exclusive claims to the respective Colonies and Protectorates by the interested Powers, have, on the contrary, been based upon full recognition of the undivided Sovereignty or Protectorate of each of the territories concerned."

The London Cocoa Market.

By THE EDITOR.

THERE is much that is new going on in the cocoa world, both productive and manufacturing, much that never existed before, probably was never dreamed of before except at the back of the brains of a few far-seeing men. Those of our readers who are interested in the production, preparation, sale and distribution of the raw bean had better, on this account, start to wake up if they want to be "within the pale" before the gates close and not remain outside, as far too many of them always have been and always will be unless they alter considerably. Many say they can never alter, but this is not strictly true. It is far more likely that they have not the go and the steady humdrum application necessary to enable them first to bury their local differences and then to push aside the inter-colonial and international difficulties so as to be able, as a united world body, to work together and Ajax-like thus be able to defy the world if it should appear to be antagonistic to their interests.

There is much to defy; the most important of all is the question of freights. Are the planters being fairly dealt with or are they still having to pay more than their share to help win the peace, after having paid a very full share towards helping win the War? Was Sir Leo Chiozza Money right when he wrote in the *Observer* (see p. 27) that "so far from the new freight rates announced by the North Atlantic Con-

ference being low as compared with the Government freights charged by the Ministry of Shipping, they remain, *after the cut*, much higher than those Government rates."

"No one can help you in the same way and to the same degree as you can help yourself." The man, or woman, who does not realize this must be mentally deficient. Since, therefore, all but a few know that such a statement is correct, why is it that only the few, and not all the planters and exporters, have hitherto shown any serious wish or inclination to really help themselves. Many have talked, and are still talking, but how many have put into action even 25 per cent. of what they themselves tell you ought to be done, until you are tired of hearing them talk. Organization, therefore, as well as freight control (from the freight-user's, not the steamer-owner's, point of view) are necessary if the production of cocoa is ever to be able to compete successfully with the beautifully organized system of the manufacturing side of the trade. I believe some centres have realized this, but not many, but if they have done so, no visible signs have appeared as yet to show that steps have been taken to encourage co-operation between the producers. An exception to this is, however, offered by the Planters' Association in Trinidad, which under the guidance of its president, Sir H. A. Alcazar, K.C. (a careful student, I believe, of TROPICAL LIFE), has been for some time past considering the question of its post-war and post-peace policy, and consulting between themselves the best means of securing large shipments of cocoa of as even a quality and break as it is feasible to look for from an island of many estates like Trinidad. What other centres are doing along these lines I cannot say, but were I pressed to give a reply, I should be bound to answer that they are doing nothing, and that this slackness will probably hit them hard in the future. How and where it will strike them does not matter; the foolishness lies in the fact that they are deliberately leaving themselves exposed to a blow that is certain to descend upon them in one form or the other sooner or later.

It may be urged that the cocoa-producing world has no reason to complain. Judging from all one hears about the evils of short tonnage, of needlessly high freights and of low maximum prices against uncontrolled high costs, planters seem to feel that they have much to complain of, and to complain of doubly, since it continues to seem necessary to tie them down as regards selling prices, whilst no restriction is put on costs on "the other side of their ledger."

Those who are feeling that the present wholesale and retail (controlled) prices of manufactured cocoa and chocolate is unfairly high when compared with the price paid for the raw material, will doubtless have been watching the assault being carried on by the South African ostrich farmers and dealers against the trade in London. Were it not for the splendid support that the American market (with 100,000,000 local buyers *plus* a record export trade) has given to our West Indian and other planters, perhaps they also would have been protesting in the same way. In the ostrich trade dispute, the direct grievance is the proposal passed by the ostrich feather dealers in London limiting the export of feathers from South Africa to

£25,000 a month. Indirectly the complaint is that the dealers by such action desire to control the market, thereby reaping heavy profits at the expense of the farmers. This seems to be the idea of many in respect to cocoa now that the war is over. Fair rates of freights, more tonnage, no restrictions, in a word fair play and no favour, is what the British (and other) cocoa (and rubber) planters are asking for. I am sure that they will get it—some day—for surely they cannot be put off much longer with the old plea of "After the War," since we have been told that the War is over.

Coming to figures, owing to the lateness of the mails from Portugal, I could not give you the Lisbon figures to the end of 1918 before. Here they are:—

Lisbon Movements—			Bags.
Stock on November 30th	...	...	102,015
Landed in December	...	...	32
Makes			102,047
Less delivered in December	...	...	13,584
Leaves a stock on December 31st 1918, of			88,463
Against	..	.. 1917, of	195,236

Since these figures appeared much wonder has been generated as to what San Thomé actually produced last year. Unfortunately there seems no chance up to now of ascertaining the quantity. All we know is that Lisbon received 134,760 bags during 1918 (against 241,533 bags delivered, or 106,773 above receipts), and that the stock in the island in January, or at the end of December, was probably 400,000 bags. This accounts for 534,760 bags, but then was all this produced in 1918, and if so, what of any cocoa sent direct, as the 93,000 bags that is known to have reached Bordeaux, and was this the only big shipment that left San Thomé for that port. A second 100,000 bags was to have gone (see TROPICAL LIFE for November, p. 158), many say they were exported, but this seems in doubt. If it never left the island, then, of course, one fourth of the above stock is of old crop and, in that case, it must be very old, 1917 growth. It seems agreed, meanwhile, that of the stock (at San Thomé) about a third has been bought for French account and is only awaiting tonnage to bring it up to Bordeaux. But it is a long wait, and for anything to lie idle in the damp, hot atmosphere of San Thomé means deterioration, and I fear that a good deal of this cocoa will leave much to be desired when it is lifted.

The Guayaquil receipts to the end of the year have still to make their appearance so far as I can ascertain. To the middle of December, that is, for 11½ months, 719,678 quintals had been sent into Guayaquil City, against 870,250 last year, and 940,491 quintals in 1916. The two steamers with 1,600 tons of Guayaquils have arrived in London.

The Bahia exports to the end of November are returned by Messrs. F. Stevenson and Co. as having been 420,000 bags for the seven months (May-November), as against 424,981 last year. The receipts exceeded the exports, having been 531,940 bags, against 511,513 bags in 1917. This leaves 130,000 bags left behind to be added to whatever stock was on hand at the end of April. In December 49,604 bags were exported and 100,132 bags received.

The statement concerning the Gold Coast crop for 1919, with which this report concluded last month, is by no means unanimous. Authoritative opinion on this side is claiming that the Gold Coast area will probably produce just as much cocoa this year as it did in 1918 and 1917, viz., 120,000 bags. All that remains to be seen is as to what proportion of this total production *on the trees* will be got down to the coast for export. It is said, probably with truth, that the very low rates, down to 5s. per load of 60 lb. (see the October report, p. 147), that ruled over there at one time, caused increased laxity on the part of the native owners, which undoubtedly reduced the output from certain areas. In the aggregate, however, there does not seem to be much idea of any shortage. Time will show who is correct.

Trinidad during the twelve months January-December, exported 299,971 bags, against 348,736 last year, and 284,278 bags in 1916. Against this Grenada exported between October 1st to December 31st last 15,857 bags, against only 662 in 1917, and 11,630 bags in 1916.

The stock of cocoa in London has increased to a considerable extent since my last report appeared. On January 11th I showed it to have been 91,114 bags, but on February 1st it stood at 117,994 bags, or nearly 27,000 bags more. This in turn became 124,800 bags as under on February 8th, which grew to 127,402 bags on February 15th.

London Stock, February 8th—	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	19,789	13,977	17,942	7,744
Grenadas ...	11,014	11,404	14,080	9,149
Other W.I. ...	2,988	9,526	27,822	3,366
British W. African	37,775	77,240	35,631	13,582
Portuguese African	11,821	7,870	24,614	4,843
Cameroons ...	1,319	5,867	842	25
Ceylon and Java	12,195	28,364	25,180	22,074
Guayaquils ...	23,300	43,933	65,568	33,680
Bahia and Brazil	1,098	4,688	11,272	1,763
Others ...	3,501	5,345	9,898	5,954
Totals ...	124,800	208,214	232,849	102,180

To use an otherwise unpardonable slang term, the stock at Havre is in truth an "eye-opener," having been whittled down to less than 9,000 bags.

According to M. Anthime Alleaume, the Havre stock at the end of the year should have been only 9,415 bags, and not 12,348 bags, the stock given last month, although the bigger set of figures is, in all conscience, small enough. Here are the later returns:—

Havre Stock, January 31st—	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	8	150 to 155	1,694	125 to 126
Bahia ...	1,698	140 „ 147	9,980	120 „ 128
Venezuela ...	4,063	150 „ 185	11,092	124 „ 175
Trinidad ...	1,417	147 „ 153	29,382	127 „ 130
Grenada and O.W.I.	13	145 „ 150	13	118 „ 123
San Thomé ...	119	144 „ 147	285	118 „ 122
San Domingo ...	—	136 „ 142	2,873	118 „ 120
Haiti ...	61	134 „ 140	4,045	114 „ 118
Accra ...	10	132 „ 135	20,083	110 „ 115
Guayaquils ...	1,588	150 „ 160	17,139	130 „ 135
Others ...	5	—	4,232	—
Totals ..	8,982 bags		100,818 bags	

During the course of last month Havre saw only 1,117 bags landed and 1,550 delivered. The total

stocks of all France to the end of November are now given, say:—

	Tons of 1,000 kos.	1918	1917	1916
Nov. 30th—Havre	716	9,100	4,776
Bordeaux	7,809	14,000	3,230
All France	14,393	39,549	20,746

It is not easy to get exact news of what is going on in New York; the best I can do at the moment is to quote the following from the *International Confectioner* of New York for January, p. 55, which says that the removal of the embargo, on December 25th, did not affect their market to any appreciable change, as the change was anticipated some time before it was actually put into effect, thereby discounting any changes that might have otherwise occurred. As a matter of fact, the lifting of the embargo worked little or no hardship on anyone, unless it were the growers and exporters from ports of origin, who, in many cases, had supplies of cocoa piled upon them, and could not find any means of shipping them to countries which had no embargo, whilst they were, of course, at that time unable to ship to the United States even when shipping space was available. Meanwhile America was allowed to import a full supply of cocoa equal to the 1917 importations, with the result that their total landings last year were, approximately, 2,270,000 bags, most of which arrived between January and June, as only 700,000 bags came in between July and December. "If there had been no embargo on cocoa," continues the *International Confectioner*, "it is possible that we might have made a record year, for our landings in 1917, the banner year, were 2,490,237 bags. With regard to 1919, it is too early to know how our domestic consumption will work out as compared with last year. Such a year as was never experienced before, whilst we are entering into a new year with the most wonderful possibilities. Considering all this, and the thousands of tons of cocoa and cocoa products which were shipped abroad to our armies and fleets, and which should not be considered as exports, we feel certain that our 'consumption' this year will take a big jump upwards. Millions have learned, in the Army, to appreciate cocoa and chocolate as never before. Many of them never drank or ate chocolates in their lives until they went into camp. They know it now and they like it, and will be cocoa users and chocolate eaters for the rest of their lives."

Had we been as prodigal with British-made cocoa and chocolate with *our* boys, what a benefit it would have been for them, especially in that biting, Hun-like cold and damp that they had to put up with at times, and what an impetus it would have given to our manufacturing trade now when the War is over, as has been and is further likely to be the case across the Herring Pond! I am not quite sure what *Verb. Sap.* means, but I notice that these words are often put after such little "spit-outs," evidently in the hopes that one of the many who are in authority over us may be wise enough to take the hint. It is the persistent refusal of the War Office and other authorities in the United Kingdom to do so that has caused me to believe that the generally accepted meaning of these words is not the correct one, for I cannot believe that those who had charge of the victualling department would have been appointed to such high positions had

they not been wise; yet no wise man would have ignored the value and use of cocoa and chocolate as a food as those who had the victualling of our land forces seem to have done right through the War.

Talking of the American demand, the usual annual table issued by Messrs. George C. Lee and Co. (formerly Hogins and Lee), has come, and shows the following movements of cocoa in America for the twelve months of last year and the two preceding it:—

American Imports, Jan.-Dec.

	1918. Bags.	1917. Bags.	1916. Bags.
All Growths	2,233,754	2,490,237	1,567,484
Including—			
Guayaquil ...	311,771	391,530	265,812
Trinidad ...	191,477	182,449	157,277
Grenada ...	46,264	25,436	22,263
Caracas ...	202,956	180,091	111,749
Surinam ...	24,035	21,080	13,768
Haiti ...	24,901	20,151	8,960
Bahia ...	440,614	596,513	248,740
Sanchez ...	249,509	322,001	319,238
San Thomé ...	—	93,508	59,071
Other African	666,810	593,782	304,782

Sales for Consumption in America.

	1918. Bags.	1917. Bags.	1916. Bags.
Jan.-Dec. All growths	2,122,505	2,276,111	1,384,769
Including—			
Guayaquils	300,569	348,801	157,893
Trinidads ...	154,017	174,905	155,467
Grenada ...	33,494	22,929	17,824
Caracas ...	171,473	136,303	106,317
Surinam ...	24,612	16,799	12,061
Haiti ...	22,276	15,084	5,112
Bahia ...	436,615	558,633	285,863
Sanchez ...	245,894	328,136	284,136
San Thomé ...	3,957	87,809	58,500
Other African	663,010	543,091	300,971

The New York stock on December 31st included 107,281 Guayaquils, 29,410 Trinidads, 80,318 Caracas, 30,056 Bahia, 31,935 Sanchez, and 47,554 "other" African. The total worked out at 346,362 bags, against 323,148 last year, and 184,069 bags in 1916.

In London all sides of the trade seem entirely dissatisfied with the continued control. Importers, exporters, buyers of cocoa butter and the small manufacturers. The only reason why the big makers can find any excuse to keep things as they are must be in connection with the low price at which they can buy supplies compared with the high retail prices for powder. Were there more butter available, the smaller makers could turn out far more chocolate and of a better quality than it seems possible to get just now whilst the control is continued.

The Board of Trade figures for January have just been published, so I will conclude with them.

Raw Cocoa Movements in the U.K.—

	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Jan. 31st. Tons.
Jan. only, 1917—	8,568	4,111	737	45,200
„ 1918—	2,966	5,010	161	42,000
„ 1919—	12,447	4,853	—	31,450
Incr. 9,481	Decr. 157	Decr. 161	Decr. 10,550	

Of the imports over 9,000 tons came from West Africa, and rather more than 2,000 from the West Indies. An increase that I note with pleasure is in our imports from Ceylon, which amounted to 406 tons in the month.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 3.]

MARCH, 1919.

ANNUAL SUBS., 10/- { POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
Potash for the Tropics. Will the Allies be the sole Suppliers?	33
Sisal for Selling.—No. VII. Soils and Climates	34
Castor Oil Production.—No. 3. Soils and Planting	36
The World and its Food Shortage—Part XI. Ground-nut Flour for Human Consumption	37
Disease on Cacao Estates in West Africa	38
Glints of the Dawn of Light and Learning—Agricultural Colleges in the Tropics	38
"Tropical Life" Friend.—No. 165	40
The Rubber Industry of the Future.—Is Consumption being Restricted?	41
Anglo-Brazilian Commercial Interests.—By Col. Sir Arthur Holbrook	42
Royalists, Revolutionaries and "Rats"	43
Trade, Politics and Finance	44
The London Cocoa Market... ..	45

Potash for the Tropics.

WILL THE ALLIES BE THE SOLE SUPPLIERS?

WITH the passing of Alsace-Lorraine from the rule of the Hun to the rule of the French, comes the query as to what extent the return of Alsatia to her "own folks" will change the future export market of potash as a fertilizer and for other purposes. The query will arise under two headings, viz.:—

(a) Will the Tropics and other centres prefer to buy from the Alsatian owners as being the more desirable body of men to trade with?

(b) If they do, will the mines in Alsatia be able to supply such a widespread demand?

Who can give satisfactory answers to these important questions?

Of course, Alsatia will not be the only country outside Germany able to supply potash—at a price, but she will be the only centre, we believe, that will ever be able to compete seriously with the German mines.

It may be remembered that at the meeting of the Pekin Syndicate at the Cannon Street Hotel (London) for their year ending June 30th, 1918, attention was called to the potash undertaking of the Eastern Pioneer Co., which owned some deposits, discovered, we believe, in China, but the chairman could not give much information. All he could say was: "I have heard, when in China, a great deal about the potash discovery, but until I go to Szechuan I cannot say what is going to happen. When we have arrived at an amicable arrangement with the local Chinese, we shall be able to discuss the proposition generally and decide whether we shall first start on the potash, the gold, the coal, or anything else."

Our Paris contemporary, *Le Phosphate*, for December 15th, devoted a page (40) to a discussion of the potash deposits in Alsace-Lorraine, under the title of "Les Gisements de Potasse d'Alsace-Lorraine," which has much in it to take note of and think about. The joke of the matter, so far as we can remember, lies in the fact that Germany in the past shut down the Alsatian mines in preference to working them so that they should not inconveniently increase the available supplies of potash and thus pull down the price of what was produced in Germany—for, of course, Alsatia is not Germany, and no one knew this better than the Germans. If we are right, then the Huns have for all these years been keeping the potash supplies in Alsatia for the benefit of France, who no doubt will much appreciate such forethought and make the most of it.

Discussing the situation, by letter, with Lieut-Ferdinand Main, of *Le Journal d'Agriculture Tropicale*,

we asked him whether he thought Germany would try, openly or otherwise, to come to a working agreement with those in charge of the Alsace mines. Can wily Germans turn Alsatians sufficiently "cutely" to deceive the French and the Alsatians, and so ingratiate themselves into the French syndicates as well as in the Stassfurt Syndicate. We can hardly believe so, if only because the Alsatians should be better able than even the Germans themselves to detect a German-turned-Alsatian. No one, we should imagine, could be under the heel of Germany, as German France, German Denmark, or German Poland, has been and not "spot" the wolf under the lamb's clothing every time.

But to return to our correspondence with Lieut. Main. In his reply he said: "You are right when you say that the German Government shut down the Alsatian mines in order to lessen the competition in the output of potash, for they allowed, not only a very limited quantity to be exported, but also fixed the price (Marks 25 per ton).

Meanwhile no one can say what will be done regarding the working of these mines owing to the French laws affecting the management of mines being technical and "special." It is reported that the contents of these mines may amount to a million and a half tons of potash, and it is very likely that the working of them will be given out either to several societies or companies, or to a "consortium" or syndicate, or committee of societies.

By an official note, issued to the agricultural papers, you can see it stated that from now potash can be purchased at the following rates:—

Kainit (13.5 per cent. of potash, K_2O)	... fcs. 2.85 c. per 100 kos.
Manure Salts (21 per cent. of potash)	... 5.55 "
Chloride of Potash (55 per cent. of potash)	20.65 "

In bulk. Bags extra. Delivered f.o.r. Mulhouse.

Applications for the above are to be made to the Office Central des Produits Chimiques Agricoles, 42 bis rue de Bourgogne, Paris, with a temporary branch office in Mulhouse, Alsace.

The English paper, *The Chemical Trade Journal and Chemical Engineer*, also published some important details about the future of Alsace and its potash output in competition with Germany, and particularly emphasizes the relatively unworked state of the mines in Upper Alsace and elsewhere.

The deposits it may be remembered were discovered by accident in 1904, but were not worked until 1910. According to *Le Phosphate*, when discussing the Alsatian mines, up to the outbreak of war, out of the fifteen or so companies formed to work the deposits, only one had commenced to produce. This was the Société Amélie, which treated about 250 tons of raw material per day, from which 40 to 50 tons of chloride of potash were obtained, but in 1914, we are told, the Alsatian area (*bassin alsacien*) produced a total of 1,167,008 tons of potash, of which 531,000, or nearly one-half, were exported.

In 1910 the German Kalisyndicat, with its headquarters at the well-known and very rich potash-mining centre of Strassfurt, allotted the Alsatian mines only 10 per cent. of the total production of the Empire.

In those days no doubt this was considered a hardship, but to-day we are glad that it was so, especially as the French Alsatians and the French generally subscribed more than half the capital of the fifteen Alsatian companies. Now, the exports from Alsace to the United States alone will be very large, we should imagine once things settle down and there is the tonnage to take the potash across. What the Tropics will need on the top of the American demand is difficult to gauge after these five famine years, but it ought surely to be very large also. The query remains only to be answered as to what tricks the ever-wily Hun will get up to in order to fight Alsatia as a seller of potash as she fought and bullied her as a nation. It also remains to be seen who will buy from Germany in preference to France and Alsatia.

Sisal for Selling.—No. VII.

SOILS AND CLIMATES.—MANURING AND YIELDS IN THE CAICOS ISLES.

(Continued from February issue, p. 19.)

KEEPING on with the Caicos Isles for a little longer, we find that Mr. Watkins's report fully confirms all we have claimed regarding the advantages of manuring—with knowledge and discretion—the fields of sisal, so much so that the following considerable space is given up to a discussion of the subject.

"Personal observatins," we are told, "made when comparing what are called the different cultivations—that is, the first, second, or third time of planting, convince me that, sooner or later, the question of manuring and replenishing the land will become of urgent importance, but fortunately the means, though neglected, of providing cheap fertilizers are at hand. The bagasse, or pulp remaining after the extraction of the fibre, contains a considerable quantity of potash, and would, after being mixed with earth or vegetable matter and well rotted, furnish a most useful manure or mulch. At present there exists so deplorable a lack of appreciation of the value of bagasse for fertilizing purposes that a tram line was laid down at one place for the sole object of 'dumping' it into the sea. Sea-weed in large quantities is also to be had close to the land, suitable and available for sisal. So important is the matter for consideration that I have been induced to forward to the owners and managers of sisal plantations a circular embodying the following scheme of elementary manurial experiments with the hope, not only of gaining definite knowledge, but of affording an object lesson on the importance of manures to small owners.

"Proposed Manurial and other Experiments for Sisal Plants in the Turks and Caicos Islands.

"(1) The initiation of the proposed experiments is due to the wish to ascertain:—

"(a) How far and under what conditions bagasse and other manures can be applied profitably in the cultivation of fibre, and

"(b) Whether close planting, while increasing the

number planted to the acre, affects the growth and vigour of the plants, and thereby the yield of fibre.

"(2) At present, the (sisal) bagasse which remains after the extraction of the fibre is practically wasted, while seaweed, which, in many places close to the sisal cultivation, is obtainable in abundance is, with pen manure, never utilized. Sooner or later the land will, under present conditions, become exhausted or cease to yield a remunerative quantity of leaves. When this happens, the cultivators will have either to extend, if possible, the area of cultivation or allow the land a prolonged rest, which means delay and loss of time and money.

"(3) From patches of land to be found in the fibre cultivation where bagasse has, by accident or otherwise, been placed, it is obvious that the growth of the plant is thereby considerably increased.

"(4) With regard to the distance of planting the suckers, it is thought, on the one hand, that close planting will keep down the weeds, but, on the other hand, it is contended that the plants, in high winds, may be injured by their neighbours.

"(5) The general plan of the proposed experiments, therefore, is directly designed to obtain information, as accurate and definite as possible, upon the following points:—

"(i) To what degree does the application of (a) bagasse by itself, (b) bagasse mixed with seaweed, and (c) bagasse mixed with pen manure, increase the growth and yield of sisal plants.

"(ii) Whether the cost of returning the bagasse to the land or of otherwise manuring the plants would not be fully recouped by the increased yield from the plants.

"(iii) Whether close planting increases materially the yield of fibre per acre.

"(6) For the purposes of these experiments, an acre of land should be divided accurately in four plots (208 ft. by 52 ft.) for each of the three series of experiments, namely (1) land planted 6 ft. by 6 ft.; (2) land planted 5 ft. by 5 ft.; and (3) land planted 4 ft. by 4 ft. The four divisions or tasks in each acre of each series should be treated as follows:—

A. Plot.—No manure.

B. „ —Manured with bagasse alone.

C. „ —Manured with bagasse and seaweed.

D. „ —Manured with bagasse and pen manure.

"(7) In conducting these experiments the following directions should be strictly observed:—

"(1) That the bagasse, seaweed, and pen manure should be allowed to rot before being applied.

"(2) That the quantity of bagasse or manure to be applied to each patch should be the same, and carefully weighed.

"(3) That the quantity to be applied to each patch should in Plot B be the weight of the bagasse taken from a quarter of an acre, and in Plots C or D should be the bagasse taken from the plot plus an equal quantity of seaweed or manure.

"(4) That the leaves on the different plots should be cut simultaneously, be kept separately, and weighed before being put through the extracting machine.

"(5) That the fibre and bagasse should be weighed after extraction.

"(6) That a careful account of the time and money expended in placing the bagasse or manure on the land should be kept.

"(7) That the plots selected should be on average land, and not on very poor or highly yielding soils."

Jumping for the moment from the question of manuring to the resultant yields, Mr. Watkins states that in Yucatan the yield of fibre is frequently 50 lb. of fibre per 1,000 leaves. There are leaves giving 100 lb. per 1,000, but this is exceptional. From the fifth to the seventh year the average yield of good plants is 75 lb. per 1,000, with an average production of half a ton to the acre. With improved machinery it is estimated that it may, in the future, be possible to extract a minimum of 7 to 8 per cent. of fibre from the leaves.

In the Caicos Islands, 120 leaves may be taken as the average yield during the life of a plant, each leaf weighing from $\frac{3}{4}$ lb. to 1 lb. In the first year of gathering the leaves two or three cuttings may be made according to the quantity of rain, and, subsequently, one cutting a year. The average number of leaves at each cutting may be roughly calculated at:—

First cutting	...	...	...	30 to 40
Second cutting	...	...	...	10 „ 15
Third and subsequent cuttings	...	...	...	7 „ 10

Each plant should, therefore, produce, on an average, fifteen leaves a year during its lifetime. With 1,500 plants to an acre there would be 22,500 leaves to be gathered annually. Taking the weight of each leaf at $\frac{3}{4}$ lb. to 1 lb., and a minimum of 4 per cent. of extracted fibre, 1,000 leaves should give from 30 lb. to 40 lb. of dry fibre. Each acre yielding 22,500 leaves would give, according to the weight of the leaves, an annual quantity of 675 lb. to 900 lb. of fibre.

(To be continued.)

MR. WILLIAM FAWCETT, B.Sc., F.L.S., writes to say that he found our November issue "one of the most interesting numbers, I think, that I have yet read." Now the January one has arrived, and I am glad to see (as pointed out in the first and ninth lines on page 2, under the heading 'Training Tropical Agriculturists') that you are well ahead of the rest of the world. I meant to have written before with reference to the notes on Mr. Dawe's pamphlet in the December issue on 'Wild Ginger.' You do not give the scientific name, this should be done. One of the leading authorities got into trouble a little time ago over plants of 'Chinese ginger, because they overlooked the fact that there are two distinct plants in China called ginger.' From my experience with ginger in Jamaica, I believe that, although the ginger in Colombia was apparently growing quite wild, it does not prove that it is therefore indigenous. Negroes in the old days would throw up their ginger patch and plant in a fresh piece of land. The consequence was that from a small piece of root left in the ground plants would spring up and, in a few years, have all the appearance of wild plants."

Castor-oil Production.—No. 3.

(Continued from February issue, p. 21.)

SOILS AND PLANTING.

THE castor plant, from all one hears, will grow, practically speaking, everywhere, and will stand a wider range of climates and temperatures than we, who circulate mainly in tropical and sub-tropical zones, need trouble about.

As stated last month, if we planted castor, we should try to keep it low enough to harvest by reaching from the ground. We do not say off-hand that this is always possible for the plant, our Queensland contemporary tells us, will often attain a height of 15 ft. to 20 ft., but we would recommend everyone to try the experiment of running the estate with low plants throughout to save time and cost and to increase the crop, as already explained.

It seems agreed that what is good for cotton is good for castor; other soils are also good, but a rich, well-drained, sandy loam should be snatched up when available. Wet, heavy, clay soils will not do; the plants cannot "breathe" and flourish in such land. In any case, as the roots run down you must plough deeply, and well work it before planting. Although no one so far has recommended a nursery, we would suggest that a trial be made to see whether replanting from a nursery, whether it costs more or not, will not give the best results in the end. In any case, have a nursery, i.e., a batch of young plants tucked away somewhere to replace any planted out in the open that have to be removed or which die out.

Before planting, says the *Queensland Agricultural Journal*, soften the seeds by pouring hot (not too warm, say as hot as a working agriculturist's hand can stand without flinching) water over them, and leaving them alone to soak in it for twenty-four hours. If you do this the seeds will germinate after ten days, Queensland recommends planting (in the open) in rows 6 ft. to 8 ft. apart, perhaps 6 ft. in the row, and the rows themselves 8 ft. apart would give best results in average soils, or when above the average and flourishing plants can be looked for. If pruned back to keep the plants low, they will, of course, spread out sideways to a considerable degree, so that a space 8 ft. by 8 ft. might be best in such cases. Possibly this will be found wide, and cause weeding to be necessary until the plants come along, therefore, although they grow very rapidly and begin to bear in four months or so, some care may be necessary. On that account, although the plant begins to bear so soon, it might be wise to start with a nursery, and whilst the plants are reaching 8 in. to 10 in. high, to prepare ground elsewhere for them to be planted "at stake" finally.

It is claimed in Queensland that the plants can be kept low quite easily, all that is necessary being to pinch back the main stem. As we have already suggested would be the case, our Brisbane friends claim that the pruning will increase the crops, as it would have the effect of causing the plant to throw out more flower spikes than it will otherwise do.

We have noticed, since writing the foregoing, that the *Agricultural News* of Barbados says that the water

to be poured over the seeds should be almost boiling. This would be hotter than the most hardened hand could stand, we should imagine, without flinching. Four seeds are planted when no nursery is used, and the three least satisfactory ones pulled up when the plants are 8 in. to 10 in. high. Surely this is a waste of good seeds and seedlings. In Antigua, we are told, the seeds were planted 4 ft. by 5 ft., and, if extensively cultivated and thereby causing the plants to flourish and expand, a space should be left between every eighth row to allow of a wagon or other vehicle to pass up and down with the spikes when gathering in the harvest. Spraying machines may also be needed in the Tropics if the crop is grown as a perennial, for when the plants get old a *coccus* (scale insect) attacks the bark, and these have to be sprayed with a kerosene emulsion.

When planting four seeds to the stake, from 8 lb. to 10 lb. of seed are required to the acre. Do not put the four seeds in one hole. It will take no time worth thinking of to push a stick about 1 in. in diameter in four holes about 6 in. or 9 in. apart at four corners of a square and putting a seed in each. When this is done you would have a nursery at once, and, if care is taken and the plants are strong, the three that have to be removed can be used elsewhere.

The Barbadian paper goes on to say that the plants commence to bear in from three to four months, and will continue to yield for at least three months.

In the Tropics the castor plant is a perennial, but it is questionable whether under cultivation it is desirable to allow the plant to continue growing after six months. Sir Francis Watts also, we believe, urges cotton planters to plough up their plants every year in order to minimize the risks of the next year's crops being attacked by pests that have been living in the "off-season" on the old plants. The castor plant is liable to be attacked by scale insects, and apart from that, the difficulty of gathering the crop and the diminished yield indicate that at the end of six months it should be ploughed up. If left alone, the plant would grow to an inconvenient height. It should therefore be topped by pinching back the main stem when the plant is about 2 ft. high; this will cause the plant to throw out more fruit spikes. When the capsules turn brown it is time to harvest the seed. This is done by cutting off the spikes and removing them to a barn to dry. The seeds should not ordinarily be allowed to dry on the plant, as in some varieties the pods are very apt to burst open automatically.

The Queensland monthly, when discussing the harvesting of the seed, tells us that "When the capsules turn brown, it is time to begin the harvest. This is done by cutting off the spikes and removing them as soon as possible to the barn. The work of harvesting must be done rapidly, for if the seeds are allowed to ripen on the tree, the pods burst open and the seeds fly in all directions. This 'popping' of the capsules makes the work of freeing the seeds a very simple one. All that has to be done is to prepare a drying ground either in a shed or in the open. The ground should either be boarded or swept clean. When the spikes are brought in, they should be spread out on the drying ground to the depth of from 6 in. to

a foot, according to the heat of the weather. Should rain occur when out-of-door drying is being carried on, draw the spikes into heaps and cover with a tarpaulin. Turn the spikes over frequently to let all get the benefit of the sun. The capsules will soon begin to burst, and in four or five days they will have shed all their seed. All that now remains to be done is to sift and winnow out the husks. When drying in the open, it is well to surround the drying spikes with a low rampart of galvanized iron or bagging, for the reason that many seeds fly out very violently, and without some such precaution would be lost. The return from an acre is about twenty bushels, about 46 lb. each."

(To be continued.)

The World and its Food Shortage.—*

Part XI.

(Continued from September issue, p. 127.)

GROUND-NUT FLOUR FOR HUMAN CONSUMPTION.

As stated in the concluding paragraph of this section in the September issue, we fully intended to have started on soya beans this month, and have several articles ready for publication. Having, however, recently come across the following notes on the Indian ground-nut industry issued by the Bombay Government, and published in the *Indian Trade Journal* of July 5th, pp. 17-21, we feel obliged to call attention to what the Government of a Presidency that produces 260,000 tons (roughly one ton per acre) has to tell us about the value of ground-nuts as a food for man and beast.

The report is due to the need that arose to learn more about the possible uses to which ground-nuts and ground-nut products can be, and are being, put, and the details published in the *Indian Trade Journal* represent certain phases of an extended investigation of the industry in India carried out with special reference to the value of *Arachis hypogæa* as an article of food. Its nutritive properties and ready digestibility have been known for a very long time, and this has caused it to be regarded as a valuable cattle food as well as a good manure. With the introduction of certain improvements in the method of oil expression, however, a cake can now be obtained, we are told, which conforms to a definite standard of purity and thus enables the flour to be used as a nourishing and pleasant food. This standard is reached without any serious financial outlay on the

part of the oil-mill owner, for he can utilize his existing machinery.

This standard article has been called "nutramine" both for the sake of simplification of description and also to indicate its origin and nutritive value. This being so, the report issued, which we trust our readers will study in full, can best be described as dealing with the methods employed in preparing nutramine and in making the resultant preparations into bread and biscuits.

Those interested in the introduction of the hot-air drying machine may be glad to note that, to "pick over" the nuts more satisfactorily and effectively as well as economically, it is suggested that the nuts be subjected to cleansing on a mechanical washer and then thoroughly dried in a mechanical dryer. This done, the inner red skin has now to be removed, and this, it is considered, can best be carried out by means of a blast of hot air playing on the seeds whilst they are being whirled round in a large drum. In this way the seeds are dried, cracked, and the red skin blown away. Provided the drum is revolving at a fairly slow rate and the blast of air not too great there is practically no wastage. Again, if a blast of hot air is used, the preliminary drying of the seeds is avoided, and the cleansed seeds are left practically free of their red skin and ready for oil-expressing. To obtain good clear oil and good cake, there is no doubt whatever that hydraulic presses are far superior, and the expression should always be carried out in the cold, as then the resulting oil—cold drawn—is nearly colourless, has a pleasant taste and odour, and can, through that, be used as a valuable substitute for olive oil. Obtained in this way the oil keeps remarkably well.

The Indian seed, according to the report, contain about 45 per cent. of oil, and with hydraulic presses a good yield of valuable oil is obtained by this method. The resulting cake, however, still contains between 10 to 15 per cent. of oil, and for the production of "nutramine" this is excessive. A second process, therefore, is needed; the report recommends the following, but we should imagine that a solvent extraction process would be better and cheaper.

The Bombay report suggests that the cake be subjected to a second expression, either in the hydraulic press again or in some other type of press, the cake being warmed. The resulting oil, No. 2 grade, is widely used in the soap-making industry, and the cake left after this second pressure or extraction should contain about 5 per cent. of oil, and this is the standard aimed at. This is the cake that, when finely ground in an ordinary roller mill and subsequently sieved, constitutes the new preparation known as "nutramine."

From the fine flour thus obtained biscuits and many other articles for human consumption can be made, and experiments are being made in the hopes that they will result in evolving a popular invalid food, for if the oil has been properly removed the flour has quite a pleasant taste, and possesses a high protein content. Being low in carbohydrates, it is always advisable to mix the flour with ordinary wheat flour; this gives a highly nutritious mixture, and supplies

* These and the articles to follow under the same heading have been built up mainly on the English edition of M. P. de Sornay's excellent book on "Les Plantes Tropicales Alimentaires et Industrielles," or, to give it an easy English title, "The Cultivation of the Leguminosæ Family for Food (beans, peas, &c.), Factory (i.e., oil, &c.), and Field" (i.e., green manures and fodder). Published by TROPICAL LIFE under the title of "Green Manures and Manuring" (price 16s. net, postage 8d. inland, or 1s. 6d. abroad) the book at this period of affairs is proving invaluable to those who wish to raise large crops of peas, beans, dhall, &c., either for local consumption or for shipment to Europe. This being so, our readers may be glad to gather from what we have to say some idea of what M. de Sornay has to tell us on the raising of such crops.

food in a compact and so concentrated and economical form. Bread and biscuits made from the following mixture are said to keep well and possess a pleasant taste, the dried milk adding to the food value: Ground-nut flour, 84 parts; casein (dried milk) 14 parts; sodium bicarbonate, 2 parts; total, 100 parts. Biscuits made from such a mixture are reported to be light and to keep well in a tin. Further particulars are given and should be carefully studied, but we have no room to give them here. We can only add that whilst wheat, oats, and several other cereals are markedly deficient in the so-called basic amino-acids, ground-nut cake and flour offers the largest amount of these amino-acids to be made up in the shape of cake, but to make it acceptable it must be properly prepared.

In view of the shortage of the world's food supplies both before and after the War, it would appear advisable to consider the preparation of "nutramine" for human consumption on a large scale, and on that account we trust that this report will become well known wherever ground-nuts can be grown to pay.

(To be continued.)

Disease on Cacao Estates in West Africa.

WHAT IS THE CAUSE?

"COMING across your paper," writes a West Coast planter, "it struck me that you might be able to give me some information concerning the state of my cocoa trees. On my farm I have observed that there are some full-grown trees which wither in one part, whilst elsewhere the leaves and branches are still growing. So marked is the difference between the two areas—that affected by the pest and that still free of it—that some of the full-grown trees wither in one part whilst elsewhere the leaves and branches are still growing. With one tree, this defect divided the trunk into two distinct parts, but as time went on the tree gradually dried up until it also died. The dying process takes more than nine months, but one tree took nearly twice that time. The trouble seems to attack one tree or part of a tree at a time. I have been trying to ascertain the cause, for my farm suffered a great deal in the matter. Can you give me any information on the subject?"

The trouble sounded very much like die-back. To avoid any risk of making a mistake, however, we forwarded the letter to Dr. Guy Marshall, Director of the Imperial Bureau of Entomology at the Natural History Section of the British Museum, and invoked his aid. In his reply Dr. Marshall was good enough to say that "it seems to me, from the letter sent, that there can be little doubt that the cacao trees referred to are dying from the effects of the "die-back" fungus (*Diplodia*), which Dr. Van Hall recommends should be dealt with in the following way:—

"As the parasite (die-back fungus) is probably only able to penetrate into the twigs and branches by means of existing small or large wounds, prevention is best attained by keeping the branch and foliage system in a strong and healthy condition by avoiding enemies like thrips* which defoliate the tree. This can be done by

keeping the wind off and by seeing that the trees are not suddenly exposed to the full sunlight by removing the shade too abruptly. All the dead wood should be quickly pruned off. After pruning, the cut surfaces must be carefully treated with black tar, and, accordingly, pruning should only be done in the dry season. When a branch shows symptoms of the disease, the tree can often be saved by cutting the branch off, and even when the *diplodia* (die-back) has already penetrated into the stem, it can often be successfully checked by cutting the tree down to within a foot or so of the ground," and, we would add, caring for the *jupon* or shoot which that pruning will produce from the stump, and which will go to form a new vigorously yielding tree more quickly than if the stump were removed and a seedling put in its place to grow up and develop, provided it escaped its enemies whilst doing so.

Those who do not know Dr. Van Hall's book on Cocoa, which gives much information on thrips on pp. 238, 280 and 461, should secure a copy and carefully study what he has to say; it costs 18s. 6d. post free.

Glints of the Dawn of Light and Learning.

AGRICULTURAL COLLEGES SEEM LIKELY TO SPRING UP IN SEVERAL BRITISH CENTRES.

IN January, on page 2, we touched upon the matter of Training Tropical Agriculturists, and reported progress made to the time of penning those notes.

Since then more has to be added, and all in the right direction. Taking the most important news first, because the amount given, £5,000, is substantial, and also because it is *un fait accompli*, no longer *un château en Espagne*, we were glad to see by *West Africa* for February 12 that Messrs. Cadbury Bros., Ltd., recently sent a letter to Sir Hugh Clifford, Governor of the Gold Coast, in which they state that, "We have particularly noted your reference to the hunger that exists for education among members of the population on the Coast. We have now had business connections with the Coast for ten years, during which time we have watched with very great interest the development in the cultivation of cacao, and more especially the improvement in the quality that has taken place over that period.

"It would be a great pleasure to us if we might have the opportunity of passing over to you, or some other responsible authority in the Colony, the sum of £5,000 to form the nucleus of a special educational fund. We desire to put no restrictions on the gift, but should be happy if some assistance could be given in the direction of agricultural training."

In his reply, the Governor of the Gold Coast said, "I note it is your wish that this sum should form the nucleus of a special educational fund. I regret that I am not yet in a position to formulate any definite scheme to give effect to this proposal. I venture to suggest however, that the sum in question should be invested in five per cent. War Bonds in the name of the Treasurer of the Gold Coast, and, if this is done, I will undertake that the interest accruing shall not be expended until the purpose for which it is proposed to utilise it has first obtained your approval."

In London, it is proposed to present to the Governors of the Imperial College of Science and Technology at

* Our friends in San Thomé and Bahia, where thrips are giving them trouble, should take special note of this.

South Kensington, a petition that they will take immediate steps to raise the status of the College to that of a university of technology, empowered to confer its own degrees in science and technology.

Up at Liverpool, at a meeting of the African Trade Section of the Chamber of Commerce on January 20, the Chairman, Mr. R. B. Miller, suggested to the meeting that the time had come to consider the question of putting on record this country's appreciation of the splendid way in which the West Africans had stood by the Empire during the years of war. This acknowledgement might cost £10,000, £15,000 or £20,000, and might take the form of a building for educational purposes, such as the nucleus of a central university or agricultural training college for all the West African Colonies.

Turning our minds to the East, we have already noted and reported (in January) that it has been proposed to establish a college that will include, we take it, a chair of agriculture—i.e., tropical agriculture. But as far back as last August the *Malay Mail* (on August 29, page 193) published a most encouraging article on the matter under the title of "A School for Planters." Ceylon and the West Indies both have schools, as well as outlying centres for training and helping the proprietors, but their pupils are probably not the same type as those referred to in the following notes, which we take from a long article that should be studied in the original, written, it must be remembered, nearly six months ago, but still quite applicable to the moment:—

"Just now there are a good many planters due to retire. Many more who are at the front will not return. The rubber industry will be largely in the hands of young planters who have taken on managers' jobs years before they have any real experience behind them. These men will become the teachers of the men who come fresh to the work after the war. How frequently do we see in reports that such and such a disease is very prevalent. It very often is not discovered until large areas have gone out of tapping, whereas, if dealt with at once, it might be quite limited in its extent.

"Accordingly, we suggest the establishment of a school of tropical agriculture, financed chiefly by the Planters' Association of Malaya, and assisted by the Government. The Government Agriculturists and private mycologists and chemists could arrange a syllabus of lectures, elementary microscopical work, models and paintings of various diseases and so on. Such a school could be erected in the vicinity of the Agricultural Department Offices and practical teaching be carried out in their experimental plantations. We have no idea how long it would take to teach a man something of the science of planting, but we should imagine that a well-arranged three months' course would probably turn out a man who knew the right way to tackle any of the problems that arise. For the benefit of the "creeper" it might include a course of book-keeping, a lecture or two on estate sanitation and health, and odds and ends that a planter ought to know."

In speaking thus, it must not be imagined that our contemporary believes that a planter can learn all he wants to know in a few months. At the beginning of the article from which we have taken this excerpt, we are told that some years ago we, i.e., *The Malay Mail*, were taken to task by the late Mr. C. V. Carey for

suggesting that a planter should know his job inside out at the end of five years. Mr. Carey said that after a long planting career he realised how little he knew.

Such remarks show how very necessary high-class agricultural colleges and institutes to encourage research and experimental work have become for the tropics. It is to be hoped, therefore, that if we mean to develop our resources as they are capable of being developed, and so be able to "pay for the war" as it can and must be paid for, we must take steps to establish such training colleges and centres to produce the right kind of man—and woman—to do the class of work that must be carried out if we are to make the most of our opportunities.

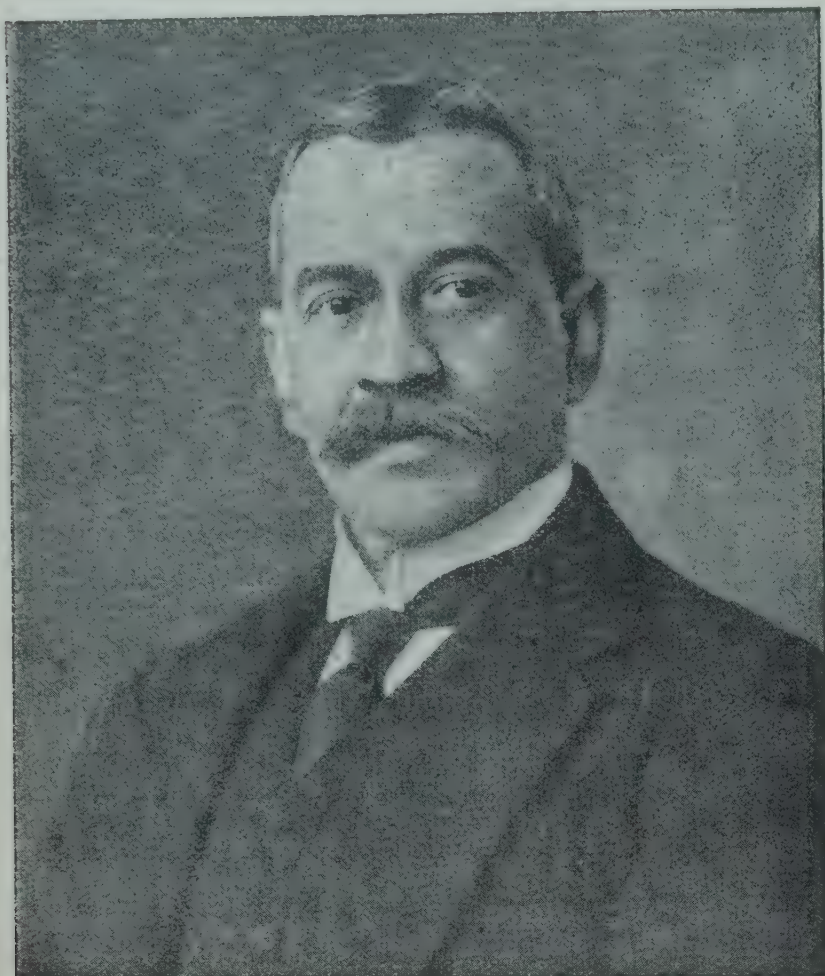
The West Indies are also on the move. Professor Carmody, the ex-Director of Agriculture in Trinidad, laid important proposals on the subject, as long ago as 1914, before the Tropical Agricultural Congress in London, and now we have that watch-dog of the West Indies, *The West India Committee Circular*, publishing letters from their correspondents, pointing out that now the moment is opportune for establishing a tropical agricultural college in those Colonies, the need of which has been apparent for so long. All sides, therefore, are clamouring for colleges. Since this is so, surely it cannot be long before the dawn breaks, and the full sun of scientific colleges makes its appearance.

As it has been with tropical medicine, at one time slighted and neglected, so it must be with tropical agriculture, and the sooner we start to make it so—East, West and Centre, Africa and the South Seas—the better for everyone, home trader and tropical producer.

Outside the Empire, we remember seeing in the *Journal Officiel* of French Indo-China of last April, that the Governor-General of that colony had issued a decree for the establishment in the colony of a High School of Agriculture and Forestry in order to train those in charge of estates to develop them on up-to-date lines and in the best way possible. The period of study is to cover three years, and diplomas will be awarded.

Condensed milk is becoming a fairly important item on Japan's list. With the development of the dairy industry in that country, the volume of shipment is becoming larger every year. In 1915 the year's export was, roughly speaking, 147,000 *yen*, or say, £14,700, whereas this year, during the four months, January-April, no less than £19,300 worth was shipped elsewhere, and much more money and energy is being put into the business. If this continues the Swiss firms will have to look to their laurels out East, especially at present retail prices.

AROUND March 20th the rubber market was quiet with Standard No. I crêpe at 2s. per lb., and smoked ribbed sheet at 1s. 11½d. to 2s. 0¼d., against 2s. 4½d. for hard fine, 2s. soft fine, and 1s. 7d. for caucho ball. Cotton stood at 16·87d. for March, and 15·97d. for April for "good middling." Copra and vegetable oils have been de-controlled, and copra should increase in value to £40 or £45; if more, prices may be restricted again.



"Tropical Life" Friend.—No. 165.

RT. HON. LORD SINHA, P.C., K.C.,
Under Secretary of State at the India Office.

As stated in our January issue (p. 14) much interest is attached to the appointment of a leading native of India to be our Under Secretary of State at the India Office, especially since the appointment has fallen on the shoulders of Lord Sinha. The sulky if not aggressive attitude of the extremists in India towards the moderates and the more favourable reception by the latter of the principles, if not of the details of the Montagu-Chelmsford report, especially since the extremists have been losing their grip on the bulk of the population, renders it increasingly necessary to have the right man at the India Office. We trust we have secured what is necessary in the person of "Our Friend" this month. Sir William Vincent, the Home Member to the Imperial Legislative Council in India, told us last September of the dangers of weakening the authority of the Government in India during the various stages of political transition that are proceeding, and are bound to go on over there for months ahead. Under the new régime, Sir William pointed out, the opinion of educated Indians would exercise much influence upon the Councils of the Supreme Government. In appointing Lord Sinha to his present position in the House of Lords and at the India Office, no one can deny that, at any rate, this statement of Sir William Vincent's has not been turned into an actual fact, and so stands to give a goodly promise of what is to follow. Such an appointment, we feel sure, can go, and will go, a long way to help the arduous and exacting work that faces the Government and the various

Committees in India, which work has been further complicated by the prevailing conditions, such as the cost of food, or even of the influenza epidemic. This appointment of Lord Sinha, coupled with the continuity of Mr. Montague's work as the Chief Secretary, is all-important at the present time. Lord Sinha, as those who have followed the careers of the modern leading men of India can tell you, was educated at Birbhum Lilla School, and then at the Presidency College at Calcutta. Mr. Sinha, as he then was, came of England in 1881, and entered Lincoln's Inn, where he was called to the Bar in 1886, the same year in which his brother, now Major Sinha (retired), entered the Indian Medical Service, after which he served in the Burmese Campaign, Tirah Expedition, and also in the expedition to China.

Meanwhile "Our Friend," whilst his brother was doing good work in the medical world, was equally well occupied as a barrister and as Standing Counsel to the Government of India and Advocate-General of Bengal.

Lord Sinha's career has since then been a striking one in many ways, as every paper, when commenting on his appointment to the India Office and on his being made a Peer, has pointed out. India certainly has come very much to the front through the genius and acknowledged ability of this gifted son of hers. Whilst undoubtedly very proud of the prominent position to which Lord Sinha has attained without any favour but on pure merit, he will, we are sure, agree with us that there are others, and plenty of them, left in India to continue the good work of bringing peace, health, and prosperity to that Empire that he helped to progress whilst over there, and which so many leading Indians have assisted to consolidate in the past.

As pointed out in our January issue, Lord Sinha has broken the record in many ways. He was the first member of the Indian Empire to be created a K.C., the first to enter the Viceroy's Executive Council, and, with the Maharajah of Bikanir, the first to be appointed to the War Cabinet and Conference over here, and is second only to Mr. Ameer Ali to be made a Privy Councillor. To cap all these, he is the first non-European born in India to become a member, and especially to hold so distinguished a position in H.M. Government of the United Kingdom, and to be made a Peer of the Realm. Now we shall look forward to Lord Sinha being the first to settle satisfactorily racial and religious as well as political disputes in India, so that even if all the many creeds and races over there cannot be blended into one, they can at least be prevailed upon to realize that the only way to be happy and contented as a nation is to help each other to pull along, and not to fight and hinder those who want to attain the same ends possibly as themselves, though not by the same means.

Lord Sinha, it may be remembered, took out last autumn to India a personal message from the Prime Minister to the Princes and people of India, and handed it to His Excellency the Viceroy for publication. Sinha, we are told, is the Sanskrit name for lion, so that the new peer could well be styled "The Lion of Raipur."

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 88-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—Changes of address should be promptly notified.

7.—Non-receipt of copies of the Journal should be notified to the Publishers.

8.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

MARCH, 1919.

The Rubber Industry of the Future.

ARE PRESENT CONDITIONS CAUSING A RESTRICTION OF OUTPUT IN THE MANUFACTURED ARTICLE?

DR. B. D. PORRITT, Chief Chemist to the North British Rubber Co., Ltd., of Edinburgh, read a paper before a meeting of the Royal Society of Arts on March 5th on "The Rubber Industry—Past and Present" that made the average rubber man go away thinking deeply. As an interesting *résumé* of British patience and pluck in the past, the paper was perfect, and with the grand-nephew of the great Hancock (Thomas Hancock, whose long series of investigations, which started just 100 years ago, were destined to make his name famous) on our right, and Mr. Wickham, the Father of the industry on our left, one felt that the audience was in keeping with the title of the paper.

The past and present is not, however, so important as the future of the industry, and so, starting from what Dr. Porritt and Professor Wyndham Dunstan, the chairman, had to tell those present, we would like to continue where they left off, taking as our text the following extract from Dr. Porritt's paper, when he told us that whilst "Britain retains a predominant position in the rubber world, conditions have changed since Hancock's time, and to-day it is as a rubber producer and not as a manufacturer that this country is in the forefront. When, however, we examine the statistics for the distribution of this valuable raw

material, the figures furnish little ground for self-congratulation. This will be evident from the following table showing the consumption of Rubber in 1917, in which is included an estimate of the trade resulting from its use, based on the assumption that every 1,000 tons of crude rubber represent goods to the value of £1,000,000.

Consumer	Quantity in tons of raw rubber used	Per cent. of total output	Productive value £
United States ...	177,088	69.0	177,000,000
Great Britain ...	25,983	10.2	26,000,000
France ...	17,000	6.7	17,000,000
Italy ...	9,000	3.5	9,000,000
Russia ...	7,500	3.9	7,500,000
Canada ...	6,287	2.7	6,300,000
Scandinavia ...	5,323	1.9	5,300,090
Japan and Australia	4,600	1.3	4,500,090
Germany and Austria	3,000	1.2	3,000,000

"It is therefore evident," summed up the lecturer very justly and pertinently, "that while the British trade is second in importance, it is an insignificant second when compared with the leader in the industry, i.e., the United States."

Here certainly is food for digestion and then for immediate reform. Of course, when one looks round and realizes the mania on the part of someone, master or man, possibly both, to restrict output generally over here, and to keep the last word in time, nerve, and tissue-saving machinery out of the factory on this side, one cannot wonder that we are cutting so sorry a figure as a manufacturing nation, although 70 to 80 per cent. of the total output of raw rubber is produced within the Empire. This, too, in spite of the restricted output of the raw material during the period of the War. When, however, the Empire as a whole—India, Australia, Canada, &c., as well as the United Kingdom—produces manufactured rubber goods in the same proportion to their wealth or population that the United States can show, then the increased demand for raw rubber within the Empire will draw such much larger supplies from our estates that our output of the raw material is likely to go up to, if it does not even exceed, 90 per cent. of the world's output of raw rubber. When it does do so, then we shall be able to congratulate ourselves for a double reason, i.e., from a manufacturing as well as a producing point of view.

And yet this is only as it should be, for some malignant spirit with rubber, as with cacao, has got such a grip on our manufacturing industry that it cannot expand, and will not do so until that grip is removed. It will not be removed with cacao, with rubber, or with any other of some twenty or thirty industries until we welcome—in fact, until we are as keen to chase modern machines and appliances into factories as it seems we have been to keep them out.

Unsympathetic as one may be with the views of some strikers, the demands and requirements of level-headed labour in America should be adopted over here, and must be adopted, if the rubber-manufacturing industry is to come into its own to the full. Until this stage over here is reached (and many another) the estates overseas cannot be tapped to their utmost (with safety), but will have to continue to restrict their output to keep it down on a parity with the needlessly small output of manufactured rubber goods

per head of the United Kingdom, and of the Empire at large, compared with America.

What is it that troubles the trades over here? We are told they want short hours and high wages; if so let them have both, provided the men are highly trained and efficient. If they are, the better the wages they gain (if they deserve them) the better for the industries. Remember that consumption and production are two sides of a wheel, and that both must be present, as each is needed to balance the other if the wheel (of prosperity) is to run true. The fundamental fact about consumption under high production is that the consumers are the producers. America has been able to dominate the world as she does to-day because she has had a much larger home market to depend upon primarily.* In 1909, the American public purchased three times as many shirts, collars, &c., as the average British family, and this is due entirely, from all accounts, to the willingness of the manufacturers in America to increase their output to its utmost capacity and of the workpeople of all grades to help them to do so. Can anyone claim the same either of the rubber or cacao manufacturing industries over here? Individual firms here and there may be doing their share, but the United Kingdom as a whole surely could increase its output three- or four-fold to what it is at present.

The remedy lies in following old Sam Gompers' recipe. Mr. Gompers, with his keen, clean-shaven face, soft hat, and long cigar sticking out taut and straight like the drawings of Captain Kettle. Chief of some 2,000,000 American workmen, this is what Mr. Gompers told the *London Observer* of July 8th, 1917†: "We are not going to have the trouble here in the United States that Britain had through restriction of production. There has not been any restriction of output in America for over thirty years. We in the United States have followed an entirely different policy. We say to the employers: 'Bring in all the improved machinery and new tools you can find. We will help you to improve them still further,‡ and we will get the utmost product out of them.' Only," he added, "we will have an eight-hour day, work two or even three shifts if you like, but no individual is to work more than eight hours a day." There is much more to say on the subject. Without pretending to plead in the pages of this journal for high wages and short hours for the British working man, we do claim that America has, up to now, easily beaten us in her consumption of tropical produce, in which we are interested, owing to her output per operative and per h.p. of machinery being so much larger. This is due to the labour and time-saving machines and appliances that she has adopted. Great Britain, Canada, India, Australia, &c., can all do, and they must all do, as America has done. They owe it to the glory and good name of the Empire to begin with, to the memory of

the dead and the maimed who have fought the good fight to make the Empire safe for democracy, and they owe it to the planter and producer of the raw material on the one hand, and to their Governments, who need more money in the shape of taxes to be raised out of the Empire's increased trade, on the other. Each of these reasons should alone stimulate employers and employed in old England and elsewhere to stop quarrelling and get to work and make good. What a stimulus, therefore, have we got with all three reasons to egg us on until we get as near to perfection as it is possible to do and yet remain on this earth.

(To be continued.)

Anglo-Brazilian Commercial Interests.

By COLONEL SIR ARTHUR HOLBROOK, K.B.E., D.L.
Vice-Consul for Brazil at Portsmouth.

THE visit of the Brazilian Squadron to this country has aroused great interest in commercial circles. The public on this side as a body have still much to learn concerning the magnitude and importance of Brazil as a power and of the vastness and richness of its resources. When Brazil first threw off the Portuguese yoke we soon formed a conception of its trade, and in the earlier days the British defeated all competitors. But in recent years America and other Powers have stepped in, and the predominance of British connections has not been maintained. This, of course, you point out and discuss very fully in your book, "The Rubber Industry of the Amazon." Various reasons may be assigned for this, but apparently the chief cause is the absence of the necessary sympathy and appreciation on the part of the British shipping companies. Brazil is a very rich country, and so full of resources of its own that possibly Brazilian merchants have not sought outside trade so eagerly as the Argentine Republic and other smaller states in South America have done. Commercial concerns in Brazil are so well capitalized and generally remunerative that it is possible Brazilian merchants have drifted into a bad condition of apathetic content, whereas it is clear that, had they been as pushful as their Argentine neighbours, the present condition of their trade would have been on a very different plane by now. One instance alone will confirm this suggestion.

The export of meat from Brazil in the year before the War was a negligible one. Yet three years after the War had started the meat exports were valued at millions of pounds. The quality of the Brazilian cattle is so excellent, that if this trade were fostered it would advance by leaps and bounds. Then there is another great opening for trade with Britain, viz., that of timber. The forests of the Republic have not yet been exploited, although they offer facilities for an enormous trade. It is said that the trees are very sound in quality, and that hard woods of the finest nature abound, suitable for cabinet making and ship construction. If an export trade in timber were seriously considered as a commercial proposition, a trade of great magnitude could be speedily secured to the advantage of everyone, especially the steamship com-

* See "From War to Work." By Samuel Turner, co-author with Dr. Gray of "Eclipse or Empire." Nisbet and Co., Ltd., London.

† See Mr. Turner's book again, pp. 66, 67.

‡ "Low wages," Mr. Turner tells us on p. 22, "and invention are mutually antagonistic. It will be found, I think, invariably, that as the curve of wages rises, so too does the curve of invention. High wages and invention are cause and effect. Low-wage countries do not invent."

panies and the Anglo-Brazilian merchant firms. It is, in any circumstances, clear that the visit of the Brazilian Squadron to this country is calculated to lead to far-reaching results, for British traders are not likely to miss the opportunity now presented for opening up new connections with such vast possibilities. It is up to the Brazilian Government to reciprocate by making more widely known the natural richness and industries of their country, and how extremely suitable they are as objects of trade between Great Britain and her Dominions and Allies. Rubber and coffee alone form the most important productive industries of Brazil, items of possible trade, the proportion of which done with this country is far too small, and then comes cacao, vegetable oils, &c., which could be developed in every way. British coffee drinkers do not inquire the source of the berries from which this beverage is produced, and so are unaware of the skill and patience necessary to produce satisfactory blends with the Brazilian product as the basis. Without that basis, however, supplies would not go round, and coffee would become as scarce and dear as butter is just now and has been of late, but it is well known that far more than half of the coffee distributed throughout the world emanates from Brazil. Sugar, cotton, cacao, tobacco, and vegetable oils, therefore, are all produced, and already offer wide fields for export trade with great possibilities for future expansion. The mineral wealth also of the country must not be ignored. The purity of the Brazilian diamonds is well known, and other minerals which abound are gold, iron, manganese, copper, nickel, platinum, lead, tin, bismuth, and antimony, the collection of which Germany turned into a fine art in the past, and will do so again in the none too distant future if we do not anticipate her peaceful but trade-throttling penetration by doing so ourselves. The exploitation of this wealth again offers immense fields for exploitation, and, indeed, the resources of this rich and extensive Republic (rivalling in extent that of the United States of America) need only to be fully known to attract the capitalist and the settler, and to ensure the development of its unbounded resources to their advantage and our own, as you state in your last book "How to Pay for the War."

Royalists, Revolutionaries, and "Rats."

WE never have been keen on slang, but there is an expressive, mind-satisfying sound at times in the way in which the boy-in-the-street raps out the word "Rats" which is very pleasing to hear. You feel as if you were being able to word your own thoughts by proxy and so avoid the use of such an objectionable (?) phrase yourself.

The boy, when using this word, undoubtedly does so to show extreme disbelief in something that he has been told, especially when he has a suspicion that the teller of the yarn is trying to "pull his leg" or mislead him to an extent that makes him still more angry at being taken for such a fool as to believe the statements made. In such cases the word "rats" betokens, in our minds, impatience as well as disbelief, and often genuine and justifiable anger.

With this definition in our thoughts we have all along felt obliged to say "rats" in the most emphatic manner possible to anyone or everyone who has asked, and who are still asking, us to believe (1) that the Kaiser is badly "knocked up" after his exertions over the War; (2) that he is not scheming and plotting as vigorously as ever to get back to Germany, at least as King of Prussia; (3) that Ludendorff, Hindenburg, and the military clique (far less cowardly than the German royal families, from all one hears, especially the supreme heads) are not at the back of the Bolshevik or Spartacus risings in Germany as they were in Russia, as part of an organized programme in favour of an Imperial Germany again.

To our mind everything seems as clear as a summer's day. Every effort is being made, with that care, precision and foresight, that only a Prussian seems capable of, to overthrow the law, order, morality and healthily happy freedom that might settle on Germany were the *intelligentia* of that country to have its own way, as we hoped it would have in Russia. So desirable a state of affairs, however, does not suit the Junker and reactionary military and ruling classes of pre-war Germany. Not only could they not flourish amidst such surroundings, but they could not even exist, and what matters how much everyone else suffers so long as these mediæval despots hold sway?

Thus we maintain that the Kaiser is remaining safe in Holland whilst his militant backers and their cat's-paws in Germany, Russia, and elsewhere stir up strife and trouble and until the Spartacus and Bolshevik groups in Germany have had time to kill off, and certainly to discredit, the moderate and intelligent classes who are against the old German feudal system. This policy, if our views are correct, is being followed so that the opposition of these moderate men will be reduced to a minimum when the time comes to "rush" those three hundred and more Royalists back to Germany, and "persuade" the people to accept them as a lesser of two evils, viz., royalist rule or revolutionary war.

No one can deny that there is a widespread element of order-loving, moderate men in Germany who detest the Kaiser and all he stands for as much as they hate the Bolshevik outbreak that is trying to come out "top-dog" in Germany. Whether, however, this class is sufficiently organized, and, above all, whether it has the armaments and ammunition and also the money necessary to fight, first the revolutionary Bolsheviks and then the deposed military clique, is a very different matter. There are times when the public doubts whether it knows a quarter of the truth, or if it does, they cannot help wondering why the leading men, especially of Prussia, have not been placed under arrest, for it is stupid to think that Holland can really protect them if we want them for trial. Fancy what would happen if *all* the Allies around Holland were to "pepper" that country for half an hour, as the French alone "peppered" the Germans before Verdun. Were this to be done just to keep the gunners in practice, does anyone believe Holland or Switzerland would still harbour these men whom everyone, rightly or wrongly, look upon as criminals of a menacing type?

Since nothing, apparently, is being done, and every-

one seems likely to get off scot-free, and perhaps get their thrones back as well, we were glad, more so even than usual, to receive our copy of the *Round Table* for March and see what that leader, and generator of modern thought, had to tell us on so vexatious a subject. It has much to say, and says it well. It even speaks out with a severity against the militarism of Germany that we should scarcely have looked for. In its chapter on "Bolshevik Aims and Ideals," Bolshevism, which is the complete abnegation of democracy and of all freedom of thought and action, there is much to learn and ponder over, whilst the chapter that follows on, "The Old and New German Constitutions," is a valuable contribution to our current literature on this, the most important subject of the moment. It is a tale of tremendous energy and push on the part of someone in Germany, nominally the ex-Kaiser, and say what we like and what we will, that force, used for an evil purpose and in a still more evil manner, which sent Germany flying at the throats of every other nation, and encouraged her secret agents to gnaw at their vitals at the same time, seems to have been all but non-existent outside of Germany until her grip had very nearly throttled us.

It now remains to be seen whether we shall continue to be as virile in peace as we were in war, or go back to the old aimless, peace-loving-at-any-price ways, regardless of the fact that all the Crown-heads of Germany are still alive and free, and that they are probably plotting and intriguing as much and more than ever to get back to their old positions. Believing that they are doing so causes us to regret that more energy is not being put forth to bring Germany and her leaders to justice, and to turn on those who ask us to believe that Germany as a military power is done for,* whilst telling others who say the ex-military clique in Germany has been rendered harmless, what the boy in the street told his companions, just the one word "Rats."

Trade, Politics, and Finance.

"THE possibility of keen competition between Great Britain and the United States for the import trade of Argentina is the subject of a brief note in the February circular of the London and Brazilian Bank," wrote the City Editor of the *Morning Post* on March 6th. "After remarking that Great Britain will endeavour to recover the ground lost during the War, while the United States will try to maintain and increase the considerable volume of trade gained during the War because of Great Britain's inability

to supply the country's needs for manufactured goods to the same degree as before, the writer adds that Japan, since the establishment of shipping and banking facilities, will also have to be reckoned with, especially in the textile industries. The writer concludes with the warning that in the endeavour to capture the import trade the competing nations should not overlook the limited consuming capacity of a population that does not exceed eight millions and the fact that a reversion to the excessive credit facilities granted in pre-war times will not tend to maintain a sound state of trade."

In the same issue our London contemporary referred to the very real loss that has been sustained in South American banking circles by the death of Mr. Albert K. Raphael, one of the joint managers of the Anglo-South American Bank. His abilities were considerable, and in all that pertained to South American banking and finance his views were those of the expert. For very many years Mr. Raphael was closely connected with the London Bank of Mexico and South America, of which indeed he was the manager at the time of its fusion some few years ago with the Anglo-South American Bank.

According to Mr. J. Marques of Pará (P.O. Box 700), the exports of hevea and cauchó rubber from Pará, Manaos and Iquitos during 1918 worked out as under, in tons of 1,000 kilos:—

	To Europe Tons		To America Tons		Total Tons
Fine hard ...	3,134.3	...	4,977.7	=	8,112.0
Entrefine ...	73.2	...	484.9	=	558.3
Coarse ...	174.7	...	2,616.3	=	2,791.0
Cauchó Ball ...	149.5	...	3,476.0	=	3,625.5
Total ...	3,531.7	...	11,555.0	=	15,086.8

In the above Mr. Marques headed the list as the exporter of 18.87 per cent. of the whole, against 18 per cent. of the General Rubber Co., of Brazil, 15.95 per cent. of Stowell and Co., and 11.08 per cent. of Suarez Filho y Cia.

Talking of rubber reminds me of some remarks about the rubber-share market which were published in the Money Market column of the *Observer* of March 9th. This ran as follows:—

What is the matter with rubber? Everybody asks the question. Most people, apparently, have a few shares. This probably accounts for the widespread query. There is nothing the matter with rubber. As regards the shares, however, the matter is that they stood at too high a level for any save "boom" conditions. And you cannot have a proper "boom" without contango facilities. Every now and then cold reason will assert itself and stop indiscriminate buying. There is now talk of a 10 per cent. profit tax on rubber companies, said to be blessed in Mincing Lane, as successor, of course, to the Excess Profits duty. The Stock Exchange thinks that the suggested tax would hit the older companies, just as the Excess Profits Tax handicapped the younger producers. It is all very nebulous and uncertain. The only people pleased are the dealers, who sold at high prices, and now see a chance of replacing at a lower level. It pays to sell rubber shares on an abrupt rise.

We hear of good selling in the rubber-share market,

* The *Observer* of London for March 2nd gave up half a column to call attention to the good things in this number of the *Round Table*, especially to their article on the old and the new German constitutions. In this, they told us that a disquieting feature of the German revolution, as the writer in the *Round Table* points out, is the ease with which it has been accomplished and the general unanimity with which it has apparently been accepted. It would be truly miraculous if Prussia should have changed its temperament at the stroke of a pen, and it may turn out that the kind of democracy being forged under the Republic is very different from that which Europe would recognize as a guarantee of peace. There are indications which suggest that the heart of the Prussian "democrat" in its fundamental categories of thought and feeling is not so generically different from the heart of a Reventlow or a Bernhardi.

which means sales by people who know more than do the outsiders—directors, their friends, and so forth. Maybe they want the money to meet the increased cost of living. Maybe they think prices high enough on merits. They will buy again, as on former occasions. The average rubber shareholder, unless speculatively minded, keeps his shares provided they are those of good companies. There may be another rush to buy, but we doubt it yet awhile. The rubber-share market offers less scope to the imagination than do the oil shares. And even oil shares can go completely out of fashion. As the rubber-share market becomes more normal, so prices settle at a steady, if less exciting, level. And for a lock-up good rubber shares, we repeat, are not easy to beat.

Speaking of the money market generally, the same paper said:—

The Stock Exchange is still in a waiting mood, waiting for the Budget, and worried to some extent by the uncertainties thereof. The labour fears do not at the moment appear to have so much weight. The political uncertainties at home and abroad are perhaps less regarded. But the thinking people ask whither we are drifting financially and what is to be the solution of the difficulties. And the unthinking merely ask what is to be the income-tax, and whether or not they are to be allowed to make some extra profits here and there under the guise of commercial freedom. To those who think, the financial future is full of problems, difficult or even dangerous. The load of debt is appalling. The taxation burden may be appalling. If we attempt to carry that load year by year the dangers are obvious, however finely we may talk about economies or increase of productivity. The facts have to be faced. There has been not the slightest attempt hitherto to face them, and perhaps a sufficient excuse is that the load of debt is still being increased, and that until we see the end of it there is little use in dealing with the practical difficulties. If people will sit down and ask themselves whether we can carry the taxation burden year by year, and if we try to do so what will be the result in the community, they will prepare themselves for practical solutions. Sooner or later they will have to consider them. Everybody has been too happily apathetic over the pouring out of national moneys. Nobody up to now has worried about the day of reckoning. Let us start now and think a little.

News has just come to hand from Paris that the chief delegate for Brazil to the Peace Conference, Senhor Epitacio Pessoa, has been elected President of the United States of Brazil in succession to the late Dr. Rodrigues Alves, the news of whose recent death was received with so much regret. Born in the State of Parahyba about fifty-four years ago, and therefore still a comparatively young man, the election of Senhor Pessoa will give Brazil that which the people of the northern States, i.e., the area north of Sao Paulo, have long desired, viz., a "northerner" as their President. Whilst having had no great cause of complaint, these districts between Sao Paulo and the Guianas have often felt that if ever their resources are to be fully recognized and developed, it would probably be under one of their "own folks" as President. Having got their wish in the person of

Senhor Pessoa, northern Brazil now hopes to be able to go ahead, as they have always felt they could and should do.

We hope our readers will make a point of buying or borrowing from a library a copy of "The Economic Foundations of Peace, or World-Partnership as the Truer Basis of the League of Nations." It costs 12s. net, or 13s. 6d. post free, and when we add that the author is Mr. J. L. Garvin, editor of the *Observer*, nothing more need be added as to the value of the work. It sets forth the whole nature and breadth of the choice for mankind, but above all for Britain and America, between the constructive and destructive influences which will either make a better civilization or lead back to a vast and sombre catastrophe, far sooner than is conceived by the average man and woman. Truly does a sword of Damocles hang over the head of everyone. Foolish the individual, therefore, who does not study all he or she can of the thin thread that keeps that sword aloft, if only to see if it cannot be strengthened, better still to try and learn how to be quit of the sword. We believe Mr. Garvin's book will help us do both, if carefully studied.

The following is a comparison of the principal points in the returns of the Bank of England at the present time and in the corresponding week last year:—

March 15th	1919	1918
Bank Bullion ...	£82,435,068	£60,085,014
Reserve of Notes ...	28,171,565	30,302,550
Private Securities ...	83,583,997	97,604,309
Notes in Circulation ...	71,469,045	47,284,420
Rate of Discount ...	5 per cent.	5 per cent.
Price of 2½ % Consols...	58½	53½
Price of Bar Silver ...	47½d.	43d.

The London Cocoa Market.

ARE WE NOT DISCOURAGING THE CONSUMPTION OF COCOA IN THE UNITED KINGDOM?

BY THE EDITOR.

THERE are those in the London cocoa market who are thinking muchly. First they are puzzling their brains to find out whether a certain report is true, and secondly, they are wondering whether, if it is true, why such a bargain against the interests of a British cocoa-producing colony should have been struck for the benefit of one of the leading firms, possibly the leading firm, of one of the, so-called, neutral countries of Europe.

All who are competent to judge the comparative values of the different growth and grades of cocoa agree that Accra kinds, as their maximum price was put down to 65s., have all along been valued considerably below the parities of such growths as Trinidads, Grenadas, Cameroons, &c., especially the last-named, when here for sale. This was when the War was still on. Now, in the month of March, or at the end of February, when the War is supposed to have been over for two or three months, if, as one hears, 500 tons, or 8,000 bags, of Accras have been sold for export to a non-Ally, not at the new export rate of 72s. to 75s., but at the home grading rate of 65s. as the maximum, can anyone be surprised if those who are anxious to see the West Coast of Africa go ahead are not quite satisfied? Why should they be so? We

need all the capital we can divert to pour into West Africa to help develop the magnificent resources of that colony, as they could be and should be developed. Is it very surprising, therefore, if disinterested well-wishers of the Gold Coast, and through that colony, of the British Empire generally, should be sitting up and wondering why the money we need for our own folks should be given away to a non-Ally? Five hundred tons at 10s. per cwt., or £10 per ton, makes £5,000; at £7 10s. per ton it is equal to £3,750. But then, of course, such a report cannot be correct. I shall be looking for a flat denial now that it has appeared in print.

There is another point which is not at all satisfactory to producers abroad, and that is the set-back to the popular demand for cocoa and chocolate over here and throughout the Empire that undoubtedly exists compared to what might have been the case, and would have been, were their sale and manufacture to have been pushed. Such a state of affairs may or may not have been anyone's fault, the fact that it exists is quite enough. In these days it will be found much better to devote one's energies to remedy faults that we know exist than to trouble about the cause. Look on ahead, that is the period of reform; the time of mulls is behind, so the sooner we cut it adrift and forget about it the better.

Acting on this idea, let us therefore realize that, outside the demand to satisfy the requirements for the Navy and to send chocolate for sale at the Front, the consumption of chocolate in this country is not at all satisfactory and must be made so. The matter has been touched upon elsewhere in this issue (p. 41), but beyond what has been said there, I would like to add that: Before the War I believe that, with some of the factories, neither the cocoa manufacturers in this country nor their workpeople realized that they owed it as a duty to the planters and to the trade generally of the Empire, as well as to themselves, to turn out as much cocoa, chocolates, and cocoa products generally as they possibly could. The more that they can induce the public to consume, the better for the public, for the producers, and everyone. Why not, therefore, encourage such a consumption? With the world's supply of meat well below the world's needs, with the present tendency to ban strong drinks in every country, the general public must have something to help eke out the meat supply and to take the place of stimulants, and nothing can do this like cocoa, chocolate and confectionery. The Americans, knowing this, are taking steps to divert the breweries and their capital to chocolate and confectionery making (see the *International Confectioner* for February, p. 37, under the heading of "Brewing Money for Candy and Chocolate Making").

The United Kingdom, in spite of the War, still has money to spend on chocolates. The money may have changed hands, but there is still plenty about, as anyone who stands and watches the wasteful expenditure of money in drapery stores can vouch for. Again, by the introduction of up-to-date labour and time-saving machinery output could be increased, the quality improved, and costs lowered. All of these are extremely desirable just now if a good turnover is to be secured and retained. Are any firms taking steps

to do so? If not, whose fault is it, the Government's, the manufacturer's or the workers'?

We are assured that big salaries and wages are to be the order of the day. Even domestic servants are to receive more than they are receiving at present, and that is more than the bulk of those, at present employed, are worth. If, however, such facts have to be faced from a non-beneficial point of view, let us also remember the advantageous side of all this, which is that some 10,000,000 and more wage-earners are to have a considerably larger spending capacity, and since this is so, the first thing they will buy, as a rule, after the absolute necessities of life, will be stimulants or sweets, including chocolates. Readers of TROPICAL LIFE, therefore, who are interested in the production, sale, and distribution of sugar, cinnamon, vanilla, cocoa-butter substitutes and other confectionery raw materials must remember this, and if the demand for their wares does not chase them, they, in their turn, will be very foolish if they do not at once start to chase the demand. Someone has to do the chasing in any case, and if I had the cocoa and sugar, &c., to sell, I most certainly would not wait for the other side to start, but would begin to shout myself. Remember, ye producers, the little American verse, which I have already quoted, but which I will make use of again, as being particularly applicable to the present subject:—

The man who has a crop to sell,
And goes and says so down a well,
Is not so apt to collar the dollars
As he who climbs a tree and holloas.

Much holloaing is needed in this country and throughout the Empire to place the consumption of cocoa, now the War is supposed to be over, on the level that is its by right, for the producing industry within the Empire is an extremely important one, and no one can say the manufacturing industry in this country is so in comparison to our wealth and population. We have got three large firms in the United Kingdom and one in Canada. Australia is trying to get a look in; but what of all the rest of the Empire? If America needs two and a quarter million bags per annum for her 100,000,000 population, what quantity should the British Empire need for its population of four times that number? Surely we ought to need at least as much as the United States. If we do not someone must be to blame, and it cannot be Mr. Lloyd George or Mr. Bonar Law this time surely. We are very fond of praying the Government to look into this or that grievance, to remove this unfair tax, or adjust that one. Here is a matter that is purely the public's affair, viz., those who produce to see that the number of buyers are increased, and those who consume to see that the number of manufacturers are increased. The retail shops are plentiful enough; their only drawback is that they have had little or nothing to sell, and often what they have been receiving was not worth buying, especially when labelled "Extra fine chocolates at 4s. per lb." We have all learnt to know some of those four-shilling chocolates. The ex-Kaiser and his six sons should be made to eat all that are left. That would clear the political atmosphere, and avoid any further discontent at

these seven culprits not being brought to trial and adequately punished, although all agree that they should be.

I have tried to make light of this matter because of its very seriousness. Lack of appreciation and of understanding has the most numbing effect on the goodwill and affection of an individual or of a people of any other fault or drawback that may exist in the character and temperament of those who are anxious to retain that affection and goodwill. How many married couples and parents and children have been, and will always be, estranged by it? Possibly because one side does not know of the existence of the defect, and the other side cannot make it clear that it is there.

I believe that something of the sort exists between the temperaments of the parent country and the West Indies, especially with regard to its cocoa output. Again I would urge this is not a matter for the Government. On paper they can remove the trouble in five minutes. As an actual fact they can do nothing of the sort. It is the parties themselves alone that can remove the misunderstanding, that rift in the lute that may come if we are not careful, and which, once it is there, will always render the music less perfect, even if it does not cause it to cease. The public in the United Kingdom must be taught to appreciate more fully the value of cocoa as a food in the first place, and of the cocoa from our West Indian islands in particular in the second, and there is some subtle and difficult-to-diagnose reason that is preventing their doing so. Since so important a paper as *TROPICAL LIFE* has sounded the alarm, let us hope that it will disappear, and do so very quickly. The West Indies must help in the treatment, for they will benefit as much as anyone if a radical cure is effected. I, meanwhile, will not be idle over here.

As I am writing this the following letter from Canada was handed to me by the "post lady." I say this to show that the contents of the letter were not the cause of my writing as I have just been doing: "Many thanks for yours of February 10th. I am sending for a copy of the *International Confectioner* of New York, and will look up *United Empire* of London for London regarding what you say.*

"Our energetic friends to the South, i.e., the U.S.A., are making strenuous efforts to capture the West Indian business, and through their administration of Cuba and Porto Rico they show clearly what can be done by capital when well directed and judiciously invested.

"There is a growing feeling in the British West Indies in favour of the United States. I am satisfied that unless something is done the Empire will lose the trade of those islands, and even the islands them-

* Concerning the go-aheadness of the Americans, who have made money in huge quantities over the war and so could stop quiet for a time were it not for their natural, healthy energy that compels them to keep going. The people of this country, on the other hand, who have spent so much to make the world safe and comfortable for democracy (including America, who is quite ready to own that she has had many ha'pence and very few kicks in comparison to ourselves), seem to have lost their energy, and just when it is most necessary to be up and doing, have become quarrelsome and indecisive as a pack of children.

selves.* What we must do is by trade and treaty to show the British West Indies that their interests are best protected within the Empire.

"The U.S.A. are stretching out for more possessions, and the stronger they get, the more they make us indebted to them for our tropical fruits, &c. We have a hard problem to solve with the West Indies, and we need all the help and encouragement we can to solve it.

"There are any number of people in Canada who did not think that the West Indies were worth troubling about. The apathy of the Canadians is the most discouraging thing about the work.† I am writing you thus, knowing that I have in you one who fully understands the problem.

"Yours, &c.,

"(Signed) WILLIAM T. ROBSON,

"Hon. Sec. Canadian-West Indian League."

It is only fair to Mr. Robson to say that this letter was not actually written for the purpose to which I have put it, but it fitted in so well that I trust I am excused in making such use of it without permission.

Coming now to the producing side, to encourage which I have had to inflict you with the foregoing, since production is of no use if the consumption is not encouraged to a corresponding degree, I see that Bahia has had a busy month with exports during January, when 111,045 bags were shipped, this being one of the heaviest months by far, only November last, with 120,620 bags, being ahead of it.

Bahia Exports	1918-19 Bags	1917-18 Bags	1916-17 Bags
May-December ...	469,796	545,826	437,262
January ...	111,045	66,461	79,592
Total ...	580,841	612,287	516,854

Our own West Indian island of Trinidad shipped 85,233 bags of cocoa between October 1st and February 8th, of which 66,111 bags went to France, a market that is, I believe, still hungry for more, although not at the high rates she has been paying for the above, i.e., over \$20 (\$ = 4s. 2d.) in the island. America for once is out of it as regards values. At the moment I feel sure that it will pay British producers, especially in the West Indies, to send all the cocoa they can to London, for it is said that the control will be removed in April, and already the quantity that may be exported has been increased from 25 per cent. to 50 per cent., beyond which no one

* And I am equally satisfied that they will do nothing of the sort, unless, of course, this country goes quite mad. There is no sign of its doing so at present. We are all sane and determined to make good; the only difference of opinion being over the route by which we shall travel. I would claim that there is a natural "cussedness" in the English character that perhaps causes it to quarrel in the first place and then forces it to stick, apparently or not, to that with which it has a difference of opinion like grim death. And I like to think that it is so, in all such cases as these, married couples, Government and governed, mother country and children abroad. It is only a case of Hiawatha over again, when setting out to find happiness in Minnehaha.

"As unto the bow the cord is,
So unto the man is woman.
Though she bends him she obeys him,
Though she draws him yet she follows.
Useless each without the other."

But bending and yielding are not breaking. There must be no talk of breaking between Old England and her children overseas.
† Canada is not alone in this.—[ED. T.L.]

wants us to go, as we must have some cocoa to manufacture in the United Kingdom. In the same way as the removal of the control price in cocoa, butter has sent up the cost to its real international value of 2s. 6d. per lb., so I believe, when maximum prices are done away with for the home trade as well as for export, the value of raw cocoa in the London market will be above the parity elsewhere. What else could it be? America may be as busy as bees buying raw cocoa and making it up, but America cannot pretend to act as a shipping centre and entrepôt for the Continent, as we can and shall. Therefore, orders will come in from all around, and I hope we shall be able to get very full rates from all but our Allies; and even our Allies, judging by what France has been paying, do not mind giving full market rates. She has been no sit-on-the-fence neutral, and so does not ask for cocoa at home-graded rates.

Lisbon's figures continue to be insignificant. 3,941 bags came from San Thomé in February, against 16,334 delivered, leaving the Portuguese capital with a stock of 64,480 bags on February 28th, against 149,360 bags a year ago. The *Gaza* must now have arrived at Bordeaux with 6,142 tons of cocoa (say 100,000 bags) from San Thomé direct, as she is reported to have left that island on February 24th.

The London, and also the United Kingdom, stock continues to mount up. As regards the United Kingdom, our January-February movements, according to the Board of Trade figures, work out as under:—

<i>Raw Cocoa Movements in the U.K. —</i>				
	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Feb. 28th. Tons.
Jan., Feb., 1917—	17,161	10,087	2,312	45,700
„ 1918—	5,554	10,409	312	38,900
„ 1919—	24,071	9,732	—	38,000
Incr. 18,517 Decr. 677 Decr. 312 Decr. 900				

Of the imports over 18,000 tons came from West Africa, i.e., over 75 per cent., and 2,600 tons only from the West Indies. No wonder the public come out of the shops and refuse to buy the chocolate offered to them for sale, now they know they ought to have something better. By the way, it is said that retail prices are down in some cases to 2s. 8d. per lb., instead of the old 4s. per lb. rate. Talking of the retail trade, I am glad to learn that the London trade paper *Confectionery* (Maclaren and Sons, Ltd., Shoe Lane, London) is to be run as a weekly instead of a monthly, and will devote careful attention to the retail trade. This paper should lie alongside the *Louisiana Planter* on the tables of all agricultural societies, Chambers of Commerce, as well as of the leading firms in the Tropics. It has special sections for the planters, who have so far supported it very indifferently, as well as for the manufacturing and retail interests here. If the planters want to be supported in the “holies of holies” on this side, the least they can do is to send ten shillings to receive this paper during the coming twelve months.

Stocks run as under:—

		1919	1918	1917
Havre—Feb. 28th ...	Bags	10,352 ...	89,572 ...	74,935
London Mar. 15th ...	„	149,122 ...	194,255 ...	251,989
Totals ...		159,474 ...	283,827 ...	326,924

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 4.]

APRIL, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.

Simple, Clean & Economic Working.

Small Space Occupied.

Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
British Interests in Brazil	49
Financing our Overseas Trade	50
Developing the Resources of the Empire	52
The Fight for the Trade of the Tropics.—Japanese v. European Condensed Milk	53
Royalists, Revolutionaries and "Rats"	54
Prof. de Wildman	54
The Coconut World.—By F. Soulier-Valbert... ..	55
"Tropical Life" Friend.—No. 166	56
The Rubber Industry of the Future—No. II.—Further notes on Dr. Porritt's Paper	57
The Lyons Fair	58
Lord Leverhulme on Colonial Development	60
Trade, Politics and Finance	60
The London Cocoa Market... ..	62

British Interests in Brazil.

THOSE who really know Brazil speak well of the work that the British Chamber of Commerce is doing to help advance British interests generally throughout that republic, and so, indirectly, throughout Latin America, for Rio is an ideal centre for the trade developer to make use of as a "jumping-off" place.

In face of this, the following extract from a letter addressed by the Chamber (and that means by British firms and interests who go to form that Chamber) to the Association of the Chambers of Commerce of the United Kingdom is worth noting. We fancy other complaints of a similar nature will be heard during the coming period of reconstruction, especially if some of the schemes *sur le tapis* are adopted. No one wants to see this Empire of ours developed more keenly than we do, for no one knows better than we do on the whole the immense wealth that is tucked away in one place and the other for those who do not mind hard and persistent work; but if we back the wrong horse, a stayer and not a puller, there will be no development, but only a fat bill for the already overtaxed public, "John Citizen," according to Poy the cartoonist, to meet.

Wileman's *Brazilian Review* of February 25th called attention to the same thing as, when, speaking of the industry of the Germans, in Brazil or elsewhere, they quoted Mr. Schwab, of the Bethlehem Steel Corporation, who, when at Coblenz, said that he thought German efficiency a myth. It was not efficiency but plodding that made the Germans and Germany what they were in 1914. What has made the German so prosperous has been the fact that training and control has enabled the Germans to make those great strides in industry, commerce and discipline that have made Germany what she was industrially. It is not efficiency; it is hard labour. "I have never feared the Germans in my industry in the past, and I shall never fear them," Mr. Schwab sums up. "Germany was the second largest iron and steel producer in the world, and yet she never discovered any new process." We feel certain that the American steel magnate is correct, but are discipline, plodding and efficiency to be found in Government-controlled concerns? Have they ever been brought to light by large supplies of the public money paid out under some Government scheme or other? As we claim in "How to Pay for the War," it is by education and training alone that this Empire and its people can grow rich, not by exploitation, either of the taxpayers' money in this country, or of the resources of the Empire and of private enterprise abroad.

Here is the letter from the Rio (British) Chamber of Commerce:—

BRITISH CHAMBER OF COMMERCE IN BRAZIL,
143, RUA DA QUITANDA,
RIO DE JANEIRO.

August 24th, 1918.

DEAR SIR,

I am directed by my Council to inform you that it would appear from information which has been afforded to the Chamber that the operations of the British Trade Corporation are not strictly in accordance with the interpretation which we have given to the terms of the Charter, and they would be much obliged if it would be possible for you to give us some details as to how this Corporation is operating.

The interpretation referred to was to the effect that the British Trade Corporation would not enter into competition with existing British houses abroad, but would rather assist same to develop their existing and obtain further business. This being so, we are unable to understand how the British Trade Corporation can be a large shareholder in a company such as the Anglo-Brazilian Commercial and Agency Co., Ltd., which Company—from information given to us—proposes to establish its own branches in this country, which branches will naturally compete with existing interests. It appears to us also, that the existence of such branches of a company, directly financed by the British Trade Corporation, must naturally prejudice the position of existing or future British concerns in approaching the British Trade Association for assistance, financial or otherwise. It has further come to our knowledge that the company (the Anglo-Brazilian Commercial and Agency Co., Ltd.) has endeavoured to have withdrawn from an existing British Company in the country, an Agency which has been held by it for some time, a procedure which appears to be entirely contrary to the objects for which the British Trade Corporation is intended to work.

My Council are of opinion that it is most necessary that the above consideration should be put before you, in order that any erroneous impression which may exist here may be removed if possible.

I am, &c.,

(Signed) ARTHUR ABBOTT,
Secretary.

R. B. DUNWOODY, Esq.,

*Association of Chambers of Commerce
of the United Kingdom, London.*

We have recommended leading members of the Rio Chamber to read our book ("How to Pay for the War") and also "The Rubber Industry of the Amazon"; both contain information that will be most useful to them in times like the present and those which lie ahead of us.

Meanwhile, one of our readers who went out to Rio wrote us on February 6th that he had safely arrived and presented our letter of introduction to Mr. Abbott, the secretary of the Chamber. As a result a circular was sent round, and our subscriber had already got into touch with an enterprising and go-ahead English firm over there with, what promises to be, most favourable results. "I have been saved," writes our friend, "months of hard work and a vast amount of unprofitable expenditure through the help of the

Chamber . . . Although buyers are chary of placing orders, prospects in every way are bright. When buyers realize that there will not be a fall in prices we shall all get busy."

Financing Our Overseas' Trade.

IS THE GOVERNMENT POLICY DISCOURAGING ITS
EXPANSION, ESPECIALLY IN LATIN AMERICA?

DISCUSSING the financial standing of British companies overseas, Mr. George Lawson Johnston, speaking as chairman at the twenty-second annual meeting of Bovril, Ltd., told the shareholders "It was only on account of the predominant position she occupied in world finance and trade that England was able in pre-war times to support a population of over 600 per square mile. We did not retain that enviable position because we were as a whole more industrious than other peoples, for as a matter of fact we had begun to rest on our oars. I believe we held our grip on the world position because of the high reputation of British business men, firms, and companies working in every corner of the world and because of the free flow of British capital, which enabled them to develop enterprises in other countries, the skill and integrity displayed in the management of such undertakings being also important contributory factors. Now, most thinking people realize that the financial position is getting reversed when we join with France and Italy in borrowing a second £40,000,000 from Argentina. If we cannot afford in the future to use British capital to acquire new positions with trade advantage abroad, it is at any rate of the utmost importance not to let our present overseas companies starve for want of fresh capital just when the United States and local capitalists are becoming very active. My view is that if the Treasury does not see its way to allow these British companies to raise capital here, it should do everything possible to facilitate their getting it abroad.

"During the last few years there has been a great deal of discussion about how foreign shareholders can be kept out of British companies, and, of course, it is desirable not to let outside influences become so strong that they can get control. I think, however, the difficulty of the future will not be so much a question of how we can keep foreign capital out as of how we can get capitalists abroad to take an interest in British companies. Take the case of our own associated companies, the Bovril Australian Estates (Limited) and the Argentine Estates of Bovril (Limited). There are Australian shareholders in the former and Argentine shareholders in the latter, and I have always held that it was important to a British registered company working overseas that it should have local capital in it. The capital in these cases came in when the income-tax was only 1s. 2d. in the pound, but how will it be possible to get overseas capital into British companies when a 7 per cent. yield is turned into 4.9 per cent. by British income-tax, now 6s. in the pound, and this in addition to any income-tax the shareholder may have to pay in his own country? At the present moment the Treasury,

through the Capital Issues Committee, is prohibiting the issue of new capital in the case of many British companies whose business is oversea.

"I would suggest that such companies should not be deprived of the benefit of getting new capital if they can obtain it abroad, and they would only be likely to obtain it if free of British income-tax. For instance, if an issue is made of half a million Six Per Cent. Preference shares, £30,000 net would be paid annually to the oversea shareholders and the company should not pay income-tax on £30,000 of its year's profits. The Treasury will not gain additional income-tax by the transaction, but a British company will have been made stronger. At present there is a very large amount of capital in Buenos Aires awaiting investment, and no doubt if it were possible for those resident in the Argentine to take shares in some of the large British companies working in that country they would do so. Investors might be tempted by a yield of 7 per cent.; they would not be by a yield of under 5 per cent. I am only suggesting that new issues should be encouraged in this way, as those outside holders who are already in British companies will have to bear the income-tax. Such new issues could be made either in bearer shares or shares registered at a Buenos Aires office and made easily transferable there. I mention the Argentine particularly, as it interests us at the moment, seeing that I should like to issue some of the Argentine Estates' capital in that Republic. I think, however, the whole matter is most important from a national point of view.

"At the present time, few of the shares in the big South American British-owned railway companies are held in the countries where the railways work, and therefore, when railway strikes, rates, or taxation are being considered in those Republics, the people who discuss the matter, if interested at all, are interested only from the point of view of being employees, travellers, or payers of freight charges. Not one of them is likely to look at the question from the railway's point of view. Now, local shareholders would constitute an interested body of Nationals, who would not leave all the talking to the other side.

"We must bear in mind that we have not to-day the predominant position as a financing country that we had before the War. New countries, such as Argentina and Brazil, have capital to invest, and if they are not tempted to put it into British companies on reasonable terms, they will establish competing industries in their own country. I have referred thus at length to South American Republics, but my remarks apply equally to most of the colonies and many other newly developed foreign lands, and to companies running other businesses besides railways."

All the leading London papers seem to have freely commented on the above speech and expressed satisfaction at the remarks made. This is an extract from what the *Daily Telegraph* of February 24th had to say:—

"At this very moment the new chairman (Lord Cunliffe) of the enlarged Treasury Committee to control new issues, is understood to be in Paris investigating the financial capacity of Germany to repair the wrongs she has committed. It will be

admitted that the wealth of the country has been not a little built up of capital sent from here to initiate and carry out important enterprises outside the United Kingdom.* There may be railways in Argentina, or the Bovril Australian Estates, or the Argentine Estates of Bovril—two of the Bovril Company's subsidiaries—but they are British undertakings, they assist our trade, and furnish dividends for residents in Great Britain. The provision of the capital they require is therefore essential for British purposes. None the less, it will be remembered that the shareholders in a British railway in Cuba were recently kept out of the dividend that had been earned for many months because of the delay in obtaining Treasury consent to an issue of Debentures.

"Assuming that present conditions do not permit the issue here of fresh capital for our overseas companies there is a great deal in what Mr. George Lawson Johnston said at the Bovril meeting. His view is indeed unanswerable, urging as he did that under existing conditions the Treasury should facilitate the raising of the required capital abroad. We have referred to the subject before, but it is becoming more and more obvious that capitalists in the Argentine, Brazil, the Colonies, or elsewhere will not subscribe to British undertakings when the return they receive is reduced by 6s. in the pound, in addition to any income-tax they may have to pay in their own country. The Government cannot have it both ways. If, as is now being done, the Treasury prohibits the issue of fresh capital by companies whose business is overseas, the Government should allow the capital raised abroad to be free of British income-tax."

A UNIFORM system for testing cattle in the United Kingdom prior to their export is anxiously being sought for on this side. We were, therefore, glad to see that at the last meeting of the National Cattle Breeders' Association the question was again raised whether or not it would be possible to secure a uniform system of testing cattle for tuberculosis prior to export, reported the agriculturist correspondent of the *Morning Post*. For many years stock owners have been anxious that their cattle should be put to the test officially before leaving this country, so that on the other side of the water they should not be subject to rejection should they fail to satisfy the examiner. Cattle for the United States are officially tested prior to shipping, and it is felt that if a similar method were employed for livestock which are shipped in considerable quantities to other countries much disappointment would be prevented and the use of valuable animals be retained.

Another side of the question is that owing to the considerable expense of exportation, countries like South Africa might be able to give better prices for livestock if there were no rejections at the other end. The National Cattle Breeders' Association is endeavouring to find a way out of the difficulty. It will be

* This bears out what we have always claimed both in *TROPICAL LIFE* and in our books, especially "The Rubber Industry of the Amazon," and the Latin American section of "How to Pay for the War."

recalled that the Government built a large cattle testing station at Pirbright, in Sussex, with the object of providing facilities for the carrying out of the tuberculin test under official control. Whether a central station may be regarded as the best place to conduct the preliminary operation or not is a matter upon which breeders are divided. From their point of view the most satisfactory method is to test the animal at home, but if several testing stations were erected probably objections would disappear. The matter is of considerable importance, as it is hoped after the War that the pure-bred livestock export trade will expand greatly, and if a uniform system could be introduced whereby appointed officials might test livestock prior to exportation on behalf of the countries for which they were destined it would be a great step in the right direction.

THE following is worthy of note, for when wise men assemble in the Tropics and add poultry, pigs, &c., as a "side line" to their coco-nut and other estates. In these enterprising days they may be glad to follow this example from China. We are quoting from the *Indian Planters' Gazette*:—

"The Tuck Wo Egg Produce Factory (a Chinese firm) was completed at Yencheng, Honan, in April, and the manufacture of desiccated eggs started. The company will manufacture whole-egg powder, albumen powder, and yolk powder. The plant has a capacity of from 1,500 to 2,000 lb. of yolk per day of ten hours. All the machinery and the plant is American, excepting the dynamo and engines. The spray system is used in desiccating the egg. A galvanized steel tin chamber emptying automatically is used, upon which the eggs are dried, and it is claimed that no zinc oxide, preservatives, or chemicals are used in the preparation of the egg. The machinery costs approximately \$15,000 gold, while the plant, including the buildings and ground, cost approximately \$150,000 gold."

The same publication also reports that the Indian delegation of the Chilean Nitrate Committee recently invited essays on Indian agriculture and original ideas concerning its improvement. The first competition, for which a first prize of Rs. 1,000 was offered, was open to all in a position to conduct experiments whether on field or garden crops; the second competition, for which a first prize of Rs. 600 was offered, was similar to the other, but applicable to only a particular district. The winners are now notified as being Mr. Surendra Nath Sil, B.A., M.Sc., Assistant Professor of Agriculture, Sabour, who gets the prize of Rs. 1,000; and Mr. Sailendra Krishna Deb, B.Sc., Divisional Representative in Upper India of the Chilean Nitrate Committee, Delhi. Both the essays and plans have now been published, with a number of valuable illustrations, and we thank Mr. Runar Olson-Seffer, the local delegate of the Committee, for having sent us a copy.

JAPAN exported 11,680,000 yen (say £1,168,000) of coco-nut oil, and imported 13,050,000, or £1,305,000 worth of copra last year.

Developing the Resources of the Empire.

Colonel Amery, M.P., Under-Secretary of State for the Colonies, in the House of Commons on Thursday, February 13th, said: "If the nineteenth century was the century of the United States, the twentieth century is to be the century of the British Empire."

We also claimed much for this century, as when weurged:—

"In the same way as the nineteenth century was the era that brought to the temperate zone industrial organization, the introduction of machinery and expansion of trade at home and abroad, so will the twentieth century see the opening up and development of the illimitable wealth and consequent trade of the Tropics under the supervision of scientifically trained men from the temperate zone. And this century must and will also see the introduction of time, money, labour and life-saving machinery and appliances throughout the Tropics whereby the work can be done with less fatigue to the workers and yet with a greater speed as regards output, than is the case to-day, or has hitherto been the rule in the past."—TROPICAL LIFE.

One day, and may it soon come, when workers in Old England will be as common and as keen to work as our shirkers are at the moment to avoid it, we shall have armies of imperially trained and educated men and women throughout the Empire as keen to develop her wealth and illimitable potentialities as they have been to win the War. To repeat the old slogan, when our men and women have been trained to think imperially and to realize the extent of our Imperial resources, they will be as anxious to help develop them and so help to win the peace and place us on a secure and lofty commercial plane as they have been to win the War, and maintain our military and international prestige throughout the world.

Before this can be done, however, many changes, mental and mechanical, will have to take place, and and that means careful training on the part of those who can teach and a willingness to be trained on the part of those who can be taught how to set to work and develop the resources of the Empire.

Even the most willing workers cannot make bricks without straw, or do the work required of them in the Tropics without sufficient native labour to help them. This must be the first lesson that all will have to learn; those who are to train us must realize it above all. Some of our leading politicians give no signs of realizing how short the world is of coloured or native labour in comparison to the work to be done, and which work cannot be done without the help of that labour. It was to drive home this, the first and most important of all the lessons that we have to learn, which led us to publish our book "How to Pay for the War."

In his speech, from which we take the "text" at the head of these notes, Colonel Amery, our new Under-Secretary of State for the Colonies (Lord Milner, it will be remembered, is the present (Chief) Secretary of State), told the House of Commons immediately before he uttered this short sentence that "one hundred years ago the United States were left with a population of five or six millions in a great area. Within the century they rose to a population of over 100,000,000." This is a great feat, and we congratulate the United States on achieving it. Having done so, let us turn towards the Native Races in the Tropics and sub-tropics, and as the first and most important portion of our great scheme of Imperial Development, let us see that every encouragement is given to these native races to do as America has done within one

short century, and increase their numbers even if only ten-fold within the next half century.

If we can turn even twenty millions (outside of India, of course) of native labourers into a hundred millions within the coming century, then how easy it will be to make good; what a comparatively soft job it will be to approach even Mr. Wilson-Fox's £50,000,000 per annum income from vegetable oil from West Africa and the South Seas, or Mr. Bigland's two million tons of sugar from British Guiana.

Until, however, we can stem the ever ebbing tide of depopulation in the Tropics and turn it to a flood tide of increased peoples, all the debates in the House of Commons will be in vain, or else tend to be misleading and dangerous through over-optimism, and the most practical scheme yet to be evolved will go astray.

All the same our readers will be wise to turn to the leading London dailies of February 14th and read Mr. Wilson-Fox's speech when moving an amendment to the Address, and the remarks of those who followed him. Theoretically it is a pleasure to hear such speeches; practically, so far as the Tropics are concerned—it is in the tropical belt where our great stores or undeveloped wealth lie—such debates tend to be misleading because no one has, as yet, explained where the labour is to come from.

As the *Observer* said as the concluding words of the first paragraph in its opening article on "The World after the War": "If the opportunities of this fateful present are missed, and the next couple of years are misused, it is certain—certain past debate 'twixt yea and nay—that we never shall recover, but that the late enemy will." No one, so far as we have noticed, and we have followed published reports on the subject very closely, when calling attention to the opportunities, the possibilities, the openings, &c., that lie ahead, has as yet called attention, when speaking of the wealth of the Tropics, of their dangers as well. In these days when secret diplomacy is said to be dead, why do those who claim to be supermen in the matter of developing the resources of the Empire persist in remaining so dumb as to how this development is to be brought about? We do not need to be told that the resources should be developed; we want to be told how they are to be, and if no one gets up in the House of Commons and gives us this explanation, then we shall make serious mulls, and, as the *Observer* has told us, as sure as death "we shall miss the opportunities of this fateful present and never recover them." They will be recovered, however, but by our ever-present enemy, the people of Germany.

The Fight for the Trade of the Tropics.

JAPANESE V. EUROPEAN CONDENSED MILK.

REFERRING to the paragraph on p. 39 of our last issue, one of our readers has reminded us that there are those who maintain, with every chance of their prophecies becoming true, that Japan has already (in spite of Bolshevism and all the other ills that Russia is possessed of) obtained a firm footing throughout Manchuria and Siberia, for many articles that have hitherto been supplied by Germany. It will, moreover, require more than even the pre-war organization and pushful penetration of Prussia to dislodge her now Japan has

got a hold of the market. Meanwhile, those who think that Russia is the only centre in which Japan has secured an immovable grip are not aware of what she is also doing elsewhere, especially with condensed milk, an article with which the enterprising Eastern is already threatening the monopoly hitherto enjoyed by Switzerland. Secure in the belief that serious competition was impossible, Switzerland may yet see her monopoly menaced by the Japanese, judging by the rapid progress made by that country since 1880, when it first became a customer for this article, whilst to-day that market is not only not dependent on the imported milk, but even produces enough to export large quantities. Analyses made by the Hygienic Laboratory of Japan showed the quality of the Japanese milk to be superior to that of foreign brands; no wonder, therefore, that the island milk has been able to compete successfully with its competitors.

Leading international journals have called attention to this, including the *Bulletin* of the Institute at Rome, the *Jiji-Shimpoo* of Japan (as far back as April 23, 1918), and Government publications at Ottawa, Canada. From their comments, the following notes give some idea of the situation at the moment. If any country is to compete against us as a producer of condensed milk, we would rather it be Japan, for that country, at least, backed us up loyally throughout the war, and for this alone, buyers of condensed milk in the Tropics should watch Japan as an exporter, as well as a producer, of this toothsome and necessary article.

The use of condensed milk in Japan, we are told, probably dates from 1880, and Japan at one time imported as much as 1,200,000 cases in a year, but since then a condensed milk industry has developed in Japan itself.

The centre of this industry is at Mishima, in the prefecture of Shizuoka, where there are 2,776 dairy cows, 1,000 of which supply approximately 40 *kokou* (1,600 gallons) of milk daily. To prepare one case of condensed milk (4 dozen tins per case) 33 *sho* (52.14 gallons) of raw milk are said to be necessary. The factory, therefore, is able to produce about 3,600 cases a month. (A *kokou* is 4.96 bushels.)

The local conditions are excellent for the production of condensed milk, the quality of which depends on the climate, the drinking water and the fodder. The great strength of the industry lies in the fact that the local farmers undertake cattle breeding as a secondary occupation, and devote much care to it. This is what we want Brazil to do with her Amazon rubber industry.

A table giving the production, importation and exportation of condensed milk in 1913, 1914, 1915 and 1916 shows that the production and exportation continues to increase, whilst importations have dropped off considerably. Japanese brands of condensed milk were quoted early in 1918 at about 37s. 6d. to 40s. per case of four dozen tins, whereas the imported brands sell at 45s. 4d. to 46s. 10d. per case.

ADMIRAL JOHN MORESBY, who, nearly half a century ago, annexed British New Guinea to the Empire, and after whom Port Moresby received its name, recently celebrated his eighty-ninth birthday, and is, we are glad to say, still hale and hearty. The destroyer *Moresby* was also named after him, the only instance of a warship being named after a sailor in his lifetime.

Royalists, Revolutionaries, and "Rats."

WE have been criticized for the tone of the article that we published last month under the above heading, but we felt at the time that it was very appropriate. Subsequent events have proved this view to be correct. Those who think otherwise should refer to the *London Daily Telegraph* of March 27th, which said more than we did, and said it more bluntly. The German National Anthem, it reports, was again heard in Berlin, and cries of "Long live the Kaiser!" "Ludendorff, Ludendorff!" were raised. A huge procession marched to the Bismarck monument, the Mecca of Prussian and Pan-German Jingoos, and . . . a tall figure stood in front of the quondam British Embassy, and was surrounded by officers and greeted with unbounded enthusiasm. It was Ludendorff. In the face of such statements, who can truthfully claim that Germany, and especially Prussia, is to be depended on unless to play fast and loose with the Allies? Had it not been for Marshal Foch throughout, we believe that things would have been worse than they are. Those who want to let Germany down softly have been allowed to dip too deeply in the international pie. Let us hope that this open Royalist revival in Germany will help to put the "Pro-Germans" in their right place, which should not be near the Peace Conference. One seems to see Ludendorff, stern, silent and very "slim," watching his victorious rival in France, equally silent and stern, but very straight, striving so hard to make the world safe for Democracy, in spite of the spokes put in his wheels of progress by some of his so-called Allies. At times one feels more respect for Ludendorff as an open enemy than for some of our reputed friends.

THE report of the seventy-fifth annual general meeting of Messrs. Lever Bros., Ltd., speaks of their capital as having been further increased to a total of £60,000,000, divided among 66,000 shareholders. The total amount spent by the firm up to date in advertising, repairs, renewals and depreciation, by Lever Bros., Ltd., and their associated companies, exceeds £17,000,000. The ordinary shareholders have received an average dividend during the period of the war of $12\frac{1}{2}$ per cent., as compared with a return previous to the war of 15 per cent., except on one occasion, viz., in 1906, owing to newspaper attacks, and latterly, whilst the war has been on. Of the staff, 5,207 men joined the Colours, of whom 112 received decorations, including one V.C.

ON Wednesday, March 5th, Sir James Cantlie, the editor of the *Journal of Tropical Medicine and Hygiene*, called a meeting in the City of London of the representatives of several of the leading banks and firms having branches in tropical countries, and proposed that a course of lectures should be delivered and classes held on prevention and first-aid in tropical ailments. The proposal met with instant and unstinted support by the representatives of leading banks and firms, including Mr. George Croll, of Messrs. Harrison's and Crosfields, Ltd.; Major-General W. H. Grey, C.B., C.M.G. (Messrs. F. and A. Swanzy);

Mr. H. D. C. Jones, of the Hong-Kong and Shanghai Banking Corporation; Mr. E. T. Wardrop, of the Colombo Commercial Company of Ceylon; Sir Edward Rosling; Messrs. Lyall, Anderson and Co.; and McMeekin and Co., &c.

The inaugural meeting was held at The College of Ambulance, 3, Vere Street, London, W.1, on March 27th, when H.R.H. Princess Christian presided, and Sir Patrick Manson, Sir James Cantlie, Principal of the College, and others addressed the meeting.

Professor Wildeman of Brussels is Well.

HE ASKS FOR TRADE CATALOGUES ISSUED SINCE JULY, 1914.

AMONG the pleasures that peace has brought us, we have no hesitation in including a letter from Professor Ed. de Wildeman, the well-known and much-esteemed Director of the *Jardin Botanique de l'Etat*, of Brussels. From this we gather that Madame and Mdlle. de Wildeman, as well as the Professor, are still alive and fairly well, in spite of having been confined in Brussels throughout the entire period of the German occupation. Everyone will be glad to hear such news.

In a second letter the Director of the *Jardin Botanique*, who, of course, is much interested in tropical development in all ways, says that he would be very glad to receive trade catalogues, price lists, &c., issued since July, 1914, with particulars of oil-extraction machinery, rubber machinery, drying apparatus, spraying machines and fluids, presses, &c. Those who know what Belgium hopes to be doing in the Congo will realize a little what the Government and the leading firms over there will be requiring. If such literature is addressed c/o The Director, *Jardin Botanique*, Bruxelles, Belgium, we feel sure that it will arrive safely and be much appreciated. "I received this morning your bundle of *TROPICAL LIFE*," wrote M. de Wildeman. "What a pleasure it is to see them again, and how glad I shall be to read them through one by one! All such things are almost a blank to me since 1914."

THE current number of the *Bulletin of the Imperial Institute* (London: John Murray, 2s. 6d.) contains a comprehensive article on the manufacture and industrial utilization of paper yarns, which during the war were so largely used in Germany for fabrics of various kinds owing to the scarcity of jute and cotton. The manufacture of cordage and fabrics from paper yarn has been carried on in this country, but it appears unlikely that any extensive development of the industry will take place here so long as ample supplies of jute are obtainable at a reasonable price.

The section of the *Bulletin* devoted to an account of recent investigations conducted at the Imperial Institute includes a second report on samples of rubber prepared in Ceylon in order to ascertain the best methods of preparing plantation rubber of the quality required by manufacturers; a report on the value of Indian tea seed as a source of oil; and a report on minerals from Rhodesia, including a general summary of the mineral resources of that country.

The Coconut World.

By F. SOULIER-VALBERT.

COCONUTS AND FINANCE.

The following views are solely those of M. Soulier-Valbert, not ours, but having given up so many years to studying coconuts, *in situ*, in all parts of the world, everyone must agree that M. Valbert's views are well worth knowing at this critical stage in the progress of the industry, productive as well as manufacturing. We hope that this will be the first of a series of these articles, as we feel certain that anything M. Valbert has to tell us concerning the progress made by the Coconut and Vegetable-oil industries throughout the world will merit attention.—[ED. T.L.]

Now that the war is nearly over, human enterprise begins to show signs of life and to stir again, and would-be investors are on the look-out for promising offers and chances in which to place their money.

Everything promises, as with rubber, for coco-nuts to become the centre of a boom, and since this is so, those hoping to anticipate in this expanded trade must see to it that they do nothing to smear its name, but that, instead, they all work to make it as reputable as possible. The spurt, when it comes, will be a direct outcome of the experience culled from the war, which has caused England and other countries, possibly without knowing it, to recognize once and for all time the wonderful value of this new asset, until they will be known not only as the Consols of the East, but of the entire world.

Thanks to the national and international consumption of margarine, the coco-nut palm has at last come into its own, until to-day it is recognized as the world's most important food-giver in the fruit-kingdom. Not only does it yield the highest percentage of fat or oil, ranging at times as high as 60 per cent. to 70 per cent., but the costs of production are returned to the owners of a well-managed property six- to eight-fold in the price at which the copra alone is sold, and, as experts know, this article is but one of a hundred products offered to man by the palm, if he chooses to make use of them. This is why coco-nuts have been ranked as "Consols"; but the general public have still to be taught to value them on that basis, and it is only a few years ago that one or two far-seeing men started the first "white" plantations in order to assure for their factories that continuity of output that is indispensable to the modern manufacturer. In spite of the progress made, the bulk of supplies still comes, however, from self-planted palms, and no fact like this provides so forceful a stimulant in favour of a widespread plantation policy.

Everybody who can realize the profits already being made even out of "malingering" trees, i.e., those bearing the lowest number of nuts through being grown under unsatisfactory conditions, can rapidly estimate what the result might be when scientific methods are adopted and a simple, straightforward scheme adopted for laying out and running the estates.

As an example, let us consider the cost of starting an estate of 50,000 trees as being the number agreed upon as being capable of keeping a good-sized oil and fibre-plant going, and so costing as little as possible to work. Such a quantity can, therefore, be reckoned as a "unit" as used by experts when valuing estates, their output, machinery, and so on.

The capital required works out at £25,000, or 10s. per palm, as under:—

Cost of land (1,200 hectares at £2)	...	...	...	£2,400
Cleaning, digging, &c. at £5 per hectare	..	...	...	6,000
Seed-nuts and planting	...	...	...	1,300
Upkeep for 6 years at £1 per hectare	...	...	...	7,200
General expenses and management, 6 years at £1,000	...	...	...	6,000
Incidental expenses	...	...	...	1,000
Total	...	...	...	£23,900

leaving £2,000 to keep in the bank for emergencies.

At the beginning of the seventh year the revenue obtained will amount to about 3s. per tree, or £7,500 from the sale of nuts alone, based on the rate of twenty nuts per tree. This would allow for a dividend of 25 per cent., or say, 20 per cent. to be declared, and £2,500 to be carried forward for a rainy day. This with the £2,000 surplus cash, with interest and "side sales," should therefore amount to a reserve of £5,000 at the end of the seventh year.

Such a deferred plan is, however, a very unsatisfactory one from the point of view of the investing public, who wants its bread buttered on both sides, and does not hesitate to ask for both a sound investment and immediate returns. Experience, therefore, goes to show that these returns should not be less than one-sixth of the total capital invested in the planting side of the business, and the directors, therefore, if they wish to draw a good class of shareholder, must be ready to show a dividend legitimately earned during the very first year. This should continue until the entire estate comes into full bearing, when it should realize, under favourable conditions, at least a 60 per cent. dividend. This inviting prospect is based on solid facts, for I make it a point to under-estimate the general opinion that coco-nuts, like rubber, can under ideal conditions prove to be a cent. per cent. industry. Again, those who wish to take up margarine making should remember that it was proved quite recently that copra turned into coco-nut butter can show a profit of 200 per cent.

As matters tend to-day, manufacturers in a comparatively few years will find themselves forced to own the plantations, or a goodly portion of them, to which they are accustomed to look for supplies, and it is on the certainty of this fact that those now willing to finance coco-nut propositions, of a sound and reliable nature, can lay their wagers and be sure of winning.

The time has now come, therefore, for every leading Allied nation to realize the need of vegetable fats in one form and the other, but especially in the shape of high-class coco-nut oil, for the white races as well as for the world at large. Owing to this realization, the competition to secure estates or suitable areas on which to establish them will make itself felt wherever the palms will grow. Be the centre ever so remote, it will always find a market willing to take its crop at prices which show a good profit. The ex-fighting nations and those affected as regards the withdrawal of raw materials and food-stuffs for the combatants, which therefore means the entire world, know that the only certain, as well as the quickest, way to restock their oil, fat and butter reserves will be by extending the use of vegetable grease.

(To be continued.)



"Tropical Life" Friend.—No. 166.

MR. S. PERCY-LANCASTER, F.R.H.S.

Secretary of the Agricultural and Horticultural Society of India at Calcutta.

"OUR FRIEND," like ourselves, is a firm believer in India and its future as a producer of food-stuffs and raw material. We both agree that the scope is illimitable for agricultural industries, and through that for the many allied industries as well. This is especially the case down south on the Malabar coast with the undeveloped coco-nut industry. When India puts out sugar and coco-nut products, as she could do were she as developed and up-to-date as Ceylon as an agricultural centre, the natives dependent on these industries would be comparatively wealthy to what they are now, and so become much more important buyers of Indian-made and British-made goods.

Realizing these possibilities, Mr. Percy-Lancaster, like his father before him, has always worked to bring that portion of India within his jurisdiction as prominently forward and up-to-date as possible, so as to make it an object-lesson for other centres to watch and follow. Possibly the Calcutta Society's gardens, which cover some twenty acres, would have done more as its chief wants to see done, and as would have been the case, were the work not hampered by a complaint not unknown elsewhere, of having to teach and demonstrate to the public in a popular fashion, that is, to give the public what it wants in place of what the trained man knows it ought to have.

Such cases are a pity; all scientific men suffer more or less from the trouble, but wisely put up with it, for they realize that half a loaf is better than no bread, and that it is better to have the public half taught along its own lines than not taught at all along the proper ones.

Thanks to Poona, Pusa, and other centres, however, much progress has been made in India, and this will be considerably increased in the near future when the rush to learn more that is certain to follow the coming of peace takes place. Mr. Percy-Lancaster and other authorities will find their work less arduous than it has been in the past, for everyone should have realized by now that playing at learning has had its day, and that those paid to demonstrate and teach the public must be allowed to do so properly.

Born just before his father was placed in charge of the gardens (a post which he occupied from 1892-1904), over which "Our Friend" now has charge, Mr. Lancaster has always devoted much time to the horticultural side of the work, realizing, as so many have done, that life in the Tropics, especially in the estate zones, can be made more healthy and pleasant to mind and body by attractive gardens and surroundings. Judging by letters received about our articles on "The Home Beautiful in the Tropics," much more attention is being devoted to garden work on estates than was formerly the case, at any rate outside India.

"My progress, however," wrote Mr. Lancaster in one of his letters, "is not what I would like it to be, but the routine work, which, of course, has to be carefully attended to takes up much of my time."

"Looking backwards, however, I have still managed to do a good deal of hybridizing work, as with *Dombeya*, *Hedychium*, *Ixora*, *Plumeria*, and *Rozelle*, and the flowering in 1916 gave several new varieties. I also spent much time in crossing *Clerodendron tithonia* and one or two other showy shrubs, but the cyclone in September, 1915, destroyed many of my results."

After being for a year under his father, Mr. Percy-Lancaster worked as a junior and then as Assistant Secretary, being placed in full charge as Secretary in 1914. As he has only just turned thirty, there is plenty of time ahead for him to continue his good work, and as he has all along recognized that there is a great scope for agriculture and also for horticulture in India, if taught in a popular but still useful way, we are quite sure that "Our Friend" will make good use of his time. At present, whatever may have been the case in the long ago, such work appears to be in its infancy; it may be its second childhood, but that does not lessen the need for further training. With the demand for home-grown vegetables and food-stuffs, the example and assistance of the Society is, we are sure, of great help, for its little pamphlets, giving cultural hints, as well as the demonstrations and advice it can offer to those anxious to learn, are invaluable just now.

The Society, i.e., The Agricultural and Horticultural Society of India, will soon be celebrating its centenary, for it was established in September, 1820, by Dr. William Carey, the celebrated Baptist missionary, whose bust occupies a conspicuous place in the meeting hall of the Society at Metcalfe Hall. Mr. W. Leycester of the I.C.S. was its first President, and Dr. Carey the Secretary. A very interesting account of the establishment and progress of the Society was written by the father of "Our Friend," and published in the *Proceedings* of the Society. Some of the earlier volumes of the Society's *Transactions* have been translated into Bengali, and an entire volume has been issued in the same tongue. In this account of the Society's work, Mr. Lancaster senior told us in a footnote (p. 476), when discussing the progress made in economic products, "that it is curious and instructive to note the decline of certain of our Indian industries, such as sugar and silk, and the rapid rise of others, notably oil-seeds, jute, tea, wheat, and tobacco."

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

APRIL, 1919.

The Rubber Industry of the Future.—No. II.

FURTHER NOTES ON DR. PORRITT'S PAPER.*

DR. PORRITT, like ourselves, discussed the need of replacing the modern supplies of uncertain and costly hand-labour by machinery as far and as quickly as possible. This is what he told us towards the end of the paper:—

"During its later years the inventiveness of the trade has not been stimulated by any long period of adversity, and it would be idle to contend that its technique or products have reached finality. If, therefore, the British manufacturer is to compete with his rivals in the markets of the world with reasonable prospects of success, he will need to face these facts and adapt his works to meet existing conditions." Last month we said that if the rubber manufacturing

industry in the United Kingdom is to expand, as it should and could do, we must be as keen on chasing modern machines and labour- and time-saving appliances into our factories as we have hitherto seemed to keep them out.

Continuing Dr. Porritt's remarks, he claimed that the "first problems which call for solution in the United Kingdom arise from the fact that the supply of cheap labour enjoyed before the war is now a memory of the past. Manual operations will, therefore, have to be employed more efficiently or supplanted by more rapid mechanical processes in unduly increased costs of production. Economic considerations will also require a greater degree of standardization in materials and products than has hitherto characterized our trade, and, as in America, must tend to promote specialization.

"Whatever may be done to simplify the processes of manufacture and to reduce unnecessary labour by the elimination of what have been termed "wheelbarrow and shovel" methods, the rubber manufacturer will, nevertheless, still be largely dependent on the skill of his workers for the quality and finish of his goods and for the reduction of wastage to a minimum."

This only bears out what Mr. Turner claims in his book, "From War to Work" (which Messrs. Nisbet tell us only costs 2s.). "Low wages and invention are mutually antagonistic. It will be found, I think, invariably that, as the curve of wages rises, so too does the curve of invention. High wages and invention are cause and effect. Low-wage countries do not invent." (See footnote in our last issue, p. 42.) This is why the biggest manufacturers must always be largely dependent on the skill and inventive ability of their workpeople. The better their pay the more their ability to invent, and hence the greater the progress; the greater the progress, the more certain and speedy the prosperity of both master and men.

"The success which may attend the efforts of the trade in treating the problems presented by the human factor will therefore have much to do with the continued prosperity of the industry," continued Dr. Porritt. "While unnecessary labour will have to be eliminated, that which is essential should be made more efficient. With this object increased attention will have to be paid to the various factors which will occur to the works manager as likely to promote the health and well-being of his employees. Amongst these one might instance as examples the illumination and ventilation of the workrooms, the elimination of fatigue on heavy or monotonous work, the institution of canteens to supply wholesome food, the encouragement of technical education, and the provision of clubs to promote social intercourse."

We shall need all the progress, expansion and prosperity in our rubber manufacturing and every other industry, above all in cotton and textiles, if we are to compete successfully, not only against the United States, but also, and especially, against Japan. Both these countries are, very naturally and wisely, "out" to gather in all the trade they can. Japan, with its unduly cheap labour, and America with its record (if not absolutely perfect) efficiency in factory and distribution, can and will gather in on a liberal

* See March issue, p. 41, on a paper read before the Royal Society of Arts, by Dr. B. D. Porritt, Chief Chemist to the North British Rubber Co., Ltd., on "The Rubber Industry—Past and Present."

scale over a wide field. It therefore behoves us to bestir ourselves, and to do so thoroughly and immediately, or we shall be too late. Anyone who is taking the trouble to study what the Trade Supplement of the *Times* of March 22nd and 29th has to say on America and Japan's race for the world's trade will realize the truth of all we have claimed in this issue and the article last month.

We cannot say more, for space forbids; much more will be said, however, we believe, on this matter and with more force and in greater detail than we can say here. We feel justified in saying this, as we happen to know that a long article discussing the matter has been sent across to the *Indian Engineer and Eastern Engineer* of Calcutta (and 50, Fenchurch Street, London, E.C.3), dealing with the production and manufacture of rubber within the Empire in the near future, and especially of the chances of establishing rubber goods factories in India. We were shown the article before it left, and found that it shows signs of having had careful attention and much work expended on it. Running into 13,000 or 14,000 words, with eight or ten blocks showing the last word in rubber machinery, the article will probably appear in three or four sections. The gist of the matter seemed to be that the more planters co-operate with engineers when striving to further improve the machinery and labour-saving appliances, the better and cheaper will be the rubber goods produced, and the larger the demand for the raw material. High costs, heavy taxes, and increasing transport charges may tend to drive orders for the manufactured articles away from the United Kingdom, and if so it would be well if India could secure such orders and so save them for the Empire.* The remedy is for us to turn out more goods per h.p. and per man employed, and also to employ a much more liberal supply of h.p. in the factories, and if this is not done we cannot expect to be able to pay the wages asked and yet turn out the goods at a sufficiently low cost to be able to compete with Japan and America, two markets carefully considered throughout. India, so close to the raw material, with a plentiful supply of labour in her midst, and excellent markets from her own railways and people, as well as from Russia and the East generally, certainly is worth developing as a rubber-manufacturing centre, we are told. In all ways, therefore, the article is highly controversial, and if published and widely read will interest all sides, producers and shippers, as well as engineers, manufacturers, and even the workpeople in the factories. Unless the name is changed in India, the article will appear under the title of "The Rubber Industry of To-day and To-morrow: Greater Efficiency and many Improvements introduced during the War." The cost per number of the *Indian Engineer* is Rs. 1, or 1s. 6d. in London.

* "In our issue of December 28th," says *Grenier's Rubber News* of February 12th, "we pointed out the urgent necessity for establishing in India, Australia, Canada and very possibly South Africa, big central rubber works, and that the product of the Mid-East should go direct to these points to be manufactured and distributed. Ceylon has taken a lead in the matter, whilst the real home of the industry, Malaya, is still ruminating over the suggestion." No wonder *Grenier's*, being a Malayan organ, heads their February article "Wake up, Malaya."

Discussing Japan and America as keen competitors of this country has brought to mind the debatable question of whether these countries should be allowed to acquire land within the Empire and thus become keen competitors with us also as producers, thanks to our allowing them to have the land to plant on. It may be remembered that in July, 1915, we gave a list of Japanese rubber planters in Borneo and Johore, and a little later, in December, 1916, we published some notes setting forth the drawbacks to the British plantation industries if we were to allow Americans, Japanese, or other nations to buy our lands to plant rubber on.

These drawbacks include such queries as:—

(1) The American and other non-British producers will further increase the output of raw rubber just when it seems likely that the war boom demand having subsided, even without such an increased output, supplies of raw rubber will already have come up to and even tend to be in advance of the demand.

(2) That the very reasons that are causing these non-British interests to be anxious to secure our lands for planting, viz., to be partly independent of outside supplies, will take the cream off the international demand for raw rubber, and therefore further spoil the price for British producers just when it is not likely to be over-remunerative (with higher taxes and wages) even under the best circumstances.

On the other hand, the Americans are not cheap workers at any time, and since this is so, it will be well to remember that there are those who claim that the British plantation industry could turn out the bulk of its rubber (i.e., all but that produced by the badly managed, badly situated, and over-capitalized companies) at a lower average cost than is now done, and that were this done, then it would not pay the Americans to come in as planters, for they could then secure all the raw rubber they needed at a lower price than they could hope to reach were they to plant lands themselves. Amalgamations of companies and a liberal reduction in directors and London office expenses would alone assure such a reduction as we have suggested, and yet leave a net profit for the shareholders that would be quite satisfactory.

The Lyons Fair.

We are glad to see by all the reports, especially the special supplement dealing with the Lyons Fair issued by the *Times* of March 22nd, that this great world-market has come to stay, as has already been proved by its rapid growth since it was first started only three years ago, in 1916, to take the place of the Leipzig fair. Already, we are told, the French undertaking has outstripped its German counterpart; we must see to it, therefore, that this satisfactory state of affairs continues and steadily increases as it continues. The site, at Lyons, is ideal, even with the defective transport facilities that still exist throughout France. Both exhibits and exhibitors were poured into Lyons, whither flocked buyers and sellers to such a degree that the accommodation failed for a time, but was soon adjusted. There is no Old-woman-who-lived-in-a-shoe about Lyons. Along came the children, but

Instead of not knowing what to do, Lyons soon found a way out of the trouble, and made everyone "comfy" without pains and penalties.

Many of our friends were there. In one or other of the fifty-three sections were many names we know, and know well, and, needless to say, in the engineering group, Messrs. David Bridge and Co., Ltd., stands forth most prominently. True to their name, this firm is leaving no stone unturned to bridge the period known as the post-war reconstruction that must of a necessity exist between 1914-1920. Having made up their mind to do this, the firm is putting up a strong, wide structure along which their many and new customers can travel without fear or hindrance. Another old friend is The Aerograph Co. of Holborn Viaduct, whilst in the textile section, the exhibit of Messrs. Asa Lees and Co., Ltd., by including the latest appliances, will do much to encourage the owners of those mills which German wantonness had destroyed. In soft goods themselves, Messrs. T. H. Downing and Co., Ltd., of Newarke Street, Leicester, appeared in more than one section—hosiery, neck wear, &c., we believe. Elsewhere the exhibit of the Calico Printers' Association, Ltd., of Manchester, included all kinds of printed fabrics for the Tropics. Other names that are well known wherever TROPICAL LIFE goes include Messrs. Burberry, Ltd., the tailor and outer clothes specialists of London; Dick, Kerr and Co., Ltd., of London, railway engineers; Musgrave and Co., Ltd., the heating and drying engineers of Belfast; The British Aluminium Co., Ltd., London; The Coventry Chain Co., Ltd.; and the Selson Engineering Co., Ltd., of London, machine tools.

The official catalogue ran into 1,000 pages, and cost francs 5, or 4s., whilst there were no less than 4,700 firms exhibiting this year, against 3,182 in 1918, and 1,342 firms in 1916, when the Fair started. The Canadian and Australian exhibits were varied and typical of their rapidly increasing industries.

In this same Trade Supplement of the *Times*, under the heading of Latin American news, we read that a decade ago Brazil was a purchaser of foreign-made textiles to the amount of between £12,000,000 and £13,000,000 annually—chiefly from the United Kingdom; to-day there are over fifty well-equipped textile factories in this Republic, and a native production amounting to an annual value of £9,350,000, whilst foreign imports have now fallen to £5,153,000. To-day there are factories in Brazil producing hats and caps for men and children to the value of £1,135,000, against the imports from abroad not exceeding £125,000. Matches used to be almost entirely supplied from overseas, but there are now a score of local factories. But although there is no longer the same market for British textiles in Brazil as heretofore, a new one has been established for textile machinery and appliances, and it is in this latter direction that Mr. J. F. Woodroffe, with whom we wrote "The Rubber Industry of the Amazon," is engaged in pushing the interests of some eight or nine leading English firms (see our November issue, p. 150). Mr. Woodroffe ought to do well for the trade of this country as opposed to the peaceful penetration tactics of Ger-

many, for Brazil still requires manufacturing plant and equipment, and he is there to supply them. We only hope that, later on, Mr. Woodroffe, or another equally capable trade developer, will go further south, for to-day both Brazil and Argentina are building factories for the manufacture of a number of articles such as textile and clothing, which formerly were imported from the United Kingdom. This development makes it necessary for British manufacturers and shippers to reconsider their position with a view to giving up the export of those articles which come into serious competition with native productions at some of the South American centres, and seeking other openings—of which there are many where TROPICAL LIFE circulates—for the exercise of their activities. At the same time makers of textile machinery, belting, and factory appliances of all sorts will be wise to take advantage of this widespread bid that Latin America is making to establish home industries, to secure as many orders as possible whilst the way is open. Sporting rifles and guns, and hunting appliances for pleasure and safety are other items that have been almost totally neglected in the past by this country, but which have a great future before them as a remunerative trade if properly nursed and pushed.

THE old stone building of the Shimbashi Station, which is familiar to all the foreign residents who came to Japan before the completion of the Tokyo Station, is to be moved to the compound of the Meiji Shrine, which is in course of construction at Yoyogi, so the *Journal* of the Japanese Chamber of Commerce at Yokohama tells us. This building was the first railway station built in Japan, and it is at the same time one of the oldest buildings of foreign style in the capital. The station was constructed when Japan's first railroad was opened between Yokohama and Tokyo in 1872 under the supervision of an American engineer.

A £10,000 company with American capital was, we understand from the *West Coast Leader* of Lima, Peru, established at Colon, Panama, last autumn. Housed in a two-storey concrete building, the company evidently intends to allow nothing to be wasted, an example which companies of a like nature and with a much larger capital would do well to follow elsewhere. Besides turning out coco-nut and palm-oil and also soap, the concern will be supplying their by-products, as glycerine, caustic potash, carbonate of potash, soda, &c.

It is estimated that it will be possible to make 1,500 gallons of coco-nut oil and 250 gallons of palm-oil daily. The factory will also have a daily capacity to manufacture 500 boxes (60 lb. each) of laundry and toilet soaps. There are to be two schooners for trading along the coast and bringing coco-nuts to the factory; and as coco-nuts were exported from Colon in 1917 to the number of 19,528,843, an ample supply of these nuts can be obtained locally as their raw material. Palm-oil will be extracted from the nuts of the Guinea, Coroza Grande, and other palm trees growing in various parts of the Republic of Panama,

as well as in the Canal Zone. It is proposed to make other vegetable oils, but in limited quantities.

We do not know the name of the above concern, but wish it the best of luck. We should like to see a few dozen similar companies started in our own colonies, on co-operative lines or as being owned by individual capitalists.

Lord Leverhulme on Colonial Development.

IN a paper, read before the Fellows of the Royal Colonial Institute on April 8th, Sir Frederick Lugard, G.C.M.G., in the chair, Lord Leverhulme told those present a good many things that we endeavoured to call widespread attention to in our book "How to Pay for the War." We trust, therefore, that those of the 13,000 (and more) members who now form the family circle of the R.C.I. will look out for their copies of *United Empire* (the organ of the Institute) with the report of Lord Leverhulme's paper, and carefully study what he had to tell us. Having done this, then re-read our book, or if you have not yet seen a copy, order one without delay.

The war ended, at any rate the first section of it, we are now arranging to take up the Arts and Crafts as applied to Peace, and to turn "our attention to supplying (now we are quoting the lecturer's own remarks) from the limitless resources of Great and Greater Britain, those most pressing and urgent requirements of ourselves and the world, which have been rendered still more urgent by this World-War.

"This necessitates the speedy development of all the commercial, mineral and agricultural wealth of the Empire . . . Our government of our Overseas Possessions can only be justified when by our wise policy we can develop them on the lines of prosperity and progress of the peoples of these lands, whether of British origin or native stock . . . I venture to assert that there never has been a time when it was so necessary for the British public to take a retrospective review of the past in order to take an intelligent view of the future . . . There can be no worse use of backward native races than to kill them or let them die of disease . . . Now we seem to be in danger of rushing to the other extreme, and to be anxious to concede to the natives such rights in relation to that portion of this fair fruitful earth over which they hunted, or which they only partially occupied, as we would not for one moment recognize if similarly claimed by a British duke in relation to the broad acres in his possession . . . Surely the very basis of the rights of any landed proprietor are the same, whatever his colour and position may be, and these rights must rest on the basis that all lands are for the fullest beneficial use of mankind, and that the requirements and necessities of mankind require that they should be made of the fullest and most complete use for the benefit of all."

In our book (p. 28) we point out that "ninety per cent. of the townsmen of this country take no useful and sustained interest in the outside, and especially in the overseas world, and therefore will be of but scant value to the Empire when, in the near future, she wants to develop her trade abroad . . ."

and say (on p. 29): "From now onwards everyone must be trained to add his full quota of utility to the good of his own country . . . This refers equally to the public everywhere within the Empire, whether landed proprietors in England, ruling Princes in India, of black chiefs in Africa. If they do not justify their ownership and control of the land that is theirs by law, by the same law we must take it from them in trust, and develop it for the good of the community until another member of the family owning the property comes along and proves himself able and willing to do what his kinsman failed in doing."

ON April 15th Professor Carmody, late Director of Agriculture, Trinidad, B.W.I., gave us an excellent paper at an afternoon meeting of the R.C.I., with Sir Daniel Morris in the chair, on "Agriculture in the Tropics for ex-Soldiers." Among those who took part in the useful debate that followed were the Governor of the Bahamas; Sir Henry Rider Haggard; Mr. Rutherford, chairman of the West India Committee; and some five or six others. We fancy that this is a paper that "has come to stay." By this we mean that it has left several proposals behind it which will be discussed, and we hope at least partially acted upon in the more or less near future. We shall have more to say on the subject next month, probably in the leading article (p. 73). Meanwhile our readers will be well advised to look out for the full report of both these papers in the monthly organ of the R.C.I.

Trade, Politics, and Finance.

WITH its December issue the official organ of the British Chamber of Commerce at Sao Paulo completes its first year of existence. We wish our contemporary many happy returns of the day. In this number Mr. Hugh Lyall, ex-editor of the *Buenos Aires Herald* and *River Plate Observer*, who is at present in Sao Paulo engaged in writing a book on Brazil, contributes a carefully considered plea for the establishment of a newspaper published in English in Brazil, at Rio or Sao Paulo. We would say better still to have one at both these important centres, especially now with the war over, and our chief enemy busily engaged, as before, in trying to push everyone else off the earth for him to get the trade. There are a number of German papers in Brazil; whether all are on the black list we cannot say, but it is strange to think that the English-speaking people, English or American, have no mouthpiece. Surely now that Mr. Lyall has mentioned the fact we shall soon be receiving a copy of this much-needed contemporary-to-be.

Going to the rival rubber-producing centre, we learn that the Rubber Growers' Association is presenting to the organizers of "Alexandra Day" five thousand flower-holders made from plantation rubber, each filled with a rose for sale on this day. What will Brazil do for the most popular cause and day in London so as not to be left out in the cold?

This reminds us that the R.G.A. has approved a prize scheme for the best suggestions for new uses

of rubber on a commercial scale. Details will be advertised shortly. Query, will those who suggest useful ways of increasing the demand through the present channels also be entitled to a prize? What about the article sent to the *Indian Engineer* (see p. 58), for instance?

Coming to money and produce market news, everything is more or less "hung up," firstly on account of the Budget, and secondly and mainly, because of the prolonged negotiations over the peace terms. Uncertainty upsets the most lethargic disposition, and there are not many such dispositions about just now, although I certainly went up in the train with one the other day. If he was not a pure Junker German—well, he was ill-bred enough for one. This reminds me. Knowing our limp, easy-going disposition, German traders are already writing and being allowed to write (which is quite another thing), sending friendly greetings to firms in London, and trusting that happy pre-war relations will be re-established. There are some fools in this world, in good truth, but in this case it still remains to be seen whether we are the fools for permitting such a thing, or the German firms who believe we are ready to shake hands with any German. To suit our ends we will make peace with Germany, but as Mr. Winston Churchill truly said, that does not mean shaking hands with Germany.

Mr. Churchill also very aptly described the political, financial, commercial and "home life" atmospheres at the moment when he told the members of the Aldwych Club on April 11th that we are all anxiously awaiting for the results of the deliberations of the Peace Conference. We are in what is called the "hush before the storm. An oppressive silence broods over Fleet Street before the peace bursts upon them with unexampled severity."

Here in a nutshell is the present state of all markets and all minds.

Going more into details whilst the produce markets have been active and prices maintained, nothing of a sensational nature can be looked for from present appearances. Rubber has been irregular and does not tend higher as one could have well expected, since motors are again possible and there is much lee-way to be made up. We shall, from all accounts, be short of sugar, and this time not from inability to move the stuff. The strike in Cuba and unfavourable weather conditions at several centres are reducing outputs. India, for instance, now expects to turn out only 2,350,000 tons, against 3,229,000 last year, or nearly 30 per cent. less. The control in England, therefore, claims that there will be no fall in price this side of August or September, may be not even during 1919. It will be a wise Empire, therefore, if it does not try to boycott our "High Price of Sugar," but secures copies and carefully reads it. The cost is only fifteen pence net. With coffee, prices are firm to dearer. The Brazilian receipts to early in April amounted to 7,751,000 bags, against 13,078,000 last year, 11,064,000 in 1917, and 13,699,000 bags in 1916. Cotton is dearer, and good middling is now 17.44d., but future contracts run lower, under 16d. per lb. Prices for rubber show both No. 1 crêpe and Standard smoked

ribbed sheet to be about 2s. per lb. or a little less, against 2s. 5d. for hard fine, 2s. 1d. for soft fine, and 1s. 6½d. for caucho ball.

Copra has gone to £40 a ton, and will, it is said, eventually go up to £50, as the demand for Europe in comparison to probable supplies will cause it to do so. Perplexing orders concerning seeds, oils and fats continue to be published. Many read them, but very few seem to understand what they mean to convey. Tin is down to £225 or £226 per ton. Shellac is quoted 205s. to 210s. for T.N. Orange, against 220s. to 230s. for Garnet A.C. cakey, but buyers seem chary of these prices. Manila hemp is put at £60. Mauritius hemp sold up to £60, New Zealand £49 and £50, with sisal at £40 to £65.

Rubber shares, like Cinderella, seem to be neglected and with about as much right, although, as stated elsewhere, costs of management in London will have to be cut if plantation kinds are to be able to show a better average profit. The same as 2s. is not the price for all the plantation rubber sold (against 2s. 5d. for hard fine), so likewise all the companies do not pay the Pataling dividend.

Look out for the first edition of the "Ceylon Rubber Planters' Manual," issued by Mr. R. Garnier, of Millakande Estate, Kalawellawa. It will cost thirty shillings in London, or Rs. 20 out East, exclusive of postage. Mr. Graeme Sinclair, Chairman of the Planters' Association of Ceylon, has contributed the Introduction, and perfection in expert knowledge throughout the book has been striven after by special sections contributed by the leading authorities, such as:—

Mr. C. C. Stephen for Factory, Machinery and General Buildings.

Mr. P. A. Keiller, F.C.S., Cultivation.

Mr. A. T. Reeve, A.R.C.S., Plant Cultivation.

Mr. A. D. Callander on Tapping.

Mr. K. G. Marsden, F.C.S., on Manufacture.

Mr. E. Gordon Brooke and Dr. H. F. Bawa on Cooly Lines and Medical Work.

Mr. A. W. Ruxton on New Clearings.

"Some book" that. We are arranging to have the book on sale, and anticipate a big demand for it.

The *Margarine Journal* (15, Avenue Chambers, Vernon Place, London, W.C.1, 7s. 6d. or 10s. a year) has made its appearance, and, if supported by producers and exporters of copra, oil-seeds and vegetable oils overseas, and also by importers of margarine, will become a valuable trade medium for all those interested in these industries or in trades allied to them. As the journal contains an Overseas section it can well serve as the mouthpiece of producers in technical and trade circles over here, in the same way as *Confectionery* is doing for the cacao and sugar planters.

The following is a comparison of the principal points in the returns of the Bank of England at the present time and in the corresponding week last year:—

	April 12th	1919	1918
Bank Bullion	...	£83,653,740	£59,694,180
Reserve of Notes	...	27,146,270	30,263,475
Private Securities	...	77,623,997	102,069,443
Notes in Circulation	...	74,957,470	47,880,705
Rate of Discount	...	5 per cent.	5 per cent.
Price of 2½ % Consols...	...	56	54½
Price of Bar Silver	...	48½d.	46½d.

The London Cocoa Market.

BY THE EDITOR.

It is becoming increasingly difficult to write these reports, for news of a reliable nature becomes more and more scarce. Why this is so is not difficult to understand if you are on the spot over here, but not too easy to explain on paper. Therefore, I simply call attention to the difficulty without pretending to offer any explanation.

Those interested in vegetable-oils and cocoa-butter substitutes are sitting up and watching the cocoa-butter market in the hope that the rise in price of the genuine article from 1s. 6d. per lb., controlled price, to 2s. 8d. on April 8th, if not later, will increase the demand for substitutes. One heard so much of the shortness of output of chocolates owing to the absence of butter before the control was taken off that you cannot help wondering why, if substitutes can be used now, they were not used when the old price of 1s. 6d. drew forth no supplies of genuine butter from the warehouses.

Coming to cocoa proper, I have received some figures of the movements at Bordeaux during March. From all one kept hearing of this market, I expected to have seen at least a quarter million bags on hand, as they had last year; I certainly did not expect so small a stock as shown below. Here are the movements according to Messrs. P. Roche and E. Coret:—

<i>Bordeaux Movements—</i>				Bags.
Stock on March 1st	...	...	...	91,782
Landed during March	...	...	...	11,307
Makes	...	...	...	103,089
Deduct deliveries in March	...	...	...	22,108
Leaves a Stock on April 1st, 1919, of	...	...	...	80,981
Against „ „ 1918 of	...	...	...	239,916

Where, therefore, is the *Gaza* with its 6,000 and more tons, or about 100,000 bags? Surely this and other parcels of cocoa have not already come in and been delivered, for, if so, how is it then that only 22,000 are shown as the deliveries? Is it that, as with Liverpool and probably also with Havre, there is so great a congestion that the cocoa has not yet been able to get through and officially returned so as to appear in the above figures? The Bordeaux stock last year is much more on a parity with what I expected to find it this month. Bahia and San Thomé still form the bulk of the present accumulations, but are only half or one-third of the quantity that I looked for.

<i>Bordeaux Stock, April 1st—</i>				1919 Bags	1918 Bags
Bahia and Brazil	...	...	...	22,588	63,125
Venezuelan	...	...	...	2,874	9,904
Guayaquil	...	...	...	5,101	3,379
Trinidad (W. I. kinds)	...	...	...	1,898	7,496
San Thomé (Entrepôts)	...	...	...	37,002	68,182
Others (Accras, Central American, Africans, &c.)	...	...	...	11,518	87,830
Totals	...	...	...	80,981	239,916

Those who ship to Liverpool do so probably because tonnage compels, but it would be interesting to know how much cocoa is laid up at this port waiting to be landed and returned the same as with Bordeaux.

You see the list of boats that go in there with five, ten, twenty and more thousands of bags at a time, and you hear complaints of manufacturers not taking delivery of the cocoa allotted to them, so that you certainly look for as fat a stock up there as I did at Bordeaux. If the cocoa is not at Liverpool, where can it be? We know it is not in London.

I say this because, at the end of February, official returns put the stock in Liverpool at 66,224 bags, against (less than) 139,000 bags in London. The Board of Trade returns on the same date (February 28th) showed the whole of the United Kingdom to have 38,000 tons of raw cocoa on hand. Multiply this at fifteen bags to the ton (since the bulk is West African, which go sixteen to the ton, or $1\frac{1}{4}$ cwt. each), and you will arrive at the substantial quantity of 570,000 bags as the total stock in the United Kingdom at the end of February, exclusive of what cocoa was then laid up at the various ports waiting to be landed and cleared. Deduct the London stock, 139,000 bags from the United Kingdom total, and you have 431,000 bags left. If this cocoa is not up at Liverpool, where is it? If it is at Liverpool, would it not be much better to send cocoa to London for a time, as this port is not congested, and will undoubtedly be the best market for export to the continent for some time to come? Havre also is not perfect, for I know of certain parcels waiting to enter there which seem unable to do so; but then this has been so all through on account of the military and other Government shipping that practically monopolizes the quays of that port.

The London trade journal *Confectionery*, to which I drew attention last month as coming out weekly instead of monthly, had two rather interesting paragraphs in its issue of April 3rd, the first number under their new conditions. The first paragraph told us that particulars to hand from the Cameroons show that the (British) Supervisor of Plantations out there has twenty-nine plantations running into 50,000 acres under his charge. They have been hard hit over the lack of tonnage, but for all that some 1,250 tons were sent to the United Kingdom and small shipments to the U.S.A. and France during 1918. This year, in January, 926 tons were shipped, consigned to the United Kingdom, and arrangements have, I understand, been made to export 500 tons a month. Besides this, 500 tons are to go to France *via* Duala, as the estate supplying the cocoa finds difficulty in getting the produce to Victoria, the chief shipping port and capital of the colony.

A statement made at the important convention recently held in London of National Confectionery and Chocolate Makers is somewhat disappointing at first, but those who have read the international sugar reports will know the reason why. "Sweets," we are told, "will be abundant before long and at prices hitherto unknown and unimaginable." I take this to mean that the already overcharged public (with plain sweets at 2s. 8d. per lb., whilst the planter gets 3d. per lb. or less for the sugar, and chocolate good or bad at 4s. per lb., with 90 per cent. of our imports graded at 65s. downwards, and cocoa powder at 2s. 8d. per lb. wholesale) is to be mulcted still further than he has

been. One wonders, therefore, into whose pockets these ever larger profits are to go that are piled up between the planters on the one hand and the consumers on the other. The dearer the goods the smaller the consumption. With alcohol out of favour, those professing to be anxious for our moral and physical well-being will have to make up their minds which we are to have as a tonic or stimulant, drugs or sweets. The Billie Carleton case, although just finished, has already lost its interest, so quickly do people forget, and so without alcohol and a dearth of sweets, and those none too good and very dear, we all must therefore make up our minds, as is being done in the United States, to look for more and more trouble with drug-takers and a further proportion of C3 men and women, especially women, in our midst. Chocolate and sugar sweets are not eaten by the million from the highest and lowest in the land as a luxury, but as a necessity, a healthy, harmless, nourishing stimulant. Alcohol is better than drugs, and sweets and chocolate better than alcohol, but if the Government are not going to check this "bleeding" of the planters at one end and the consumers at the other, the public will continue to cut short their purchases of sweets and buy less desirable stimulants and pick-me-ups.

In the days when one hears so much talk of Imperial co-operation, this is a matter which, since it affects every planter and exporter in the Tropics, as well as every consumer over here (and especially young women and girls who should be liberal consumers of sweets, if they are not to smoke or take drugs as they are doing now), should be protested against in the Tropics, and efforts made to counteract it the same as should be done over here. The leading confectionery trade journal has been fighting the matter right through, and this is why last month I urged planters to subscribe to this paper (*Confectionery*) which costs, I believe, the same as TROPICAL LIFE (10s. year, postage extra, but it is published weekly), and would teach agricultural societies, planters' associations, &c., a great deal about what is going on over here, as otherwise they will never know, to their loss, what is being done on this side with their produce.

Apart from the need of keeping the moral and physical condition of our public at the A1 standard, the planters cannot afford to disregard the menace to their interests of the present unreasonable cost of chocolates, no matter how bad the quality. At the moment we have more of the cheapest grades of raw cocoa in evidence than we can possibly consume unless prices are lowered. As foodstuffs tend to become dearer and scarcer, especially meat, is it not a pity to allow the raw material of so important a food, well able to replace meat as a change, to lie rotting in the Tropics instead of employing some of our unemployed in the United Kingdom to turn it into chocolate to go trotting down the red lanes of the public?

Confectionery goes for the matter as follows, their special correspondent supplying the notes: "I have an idea that the Portuguese Government would like to see its cocoa sell more freely and more regularly than has been the case while the war was on, or is likely to be the case now that transport facilities on the Gold Coast may, one day, enable Accra and its

sister ports to send forth 120,000 tons of cocoa within the twelve months. Bahia, no doubt, will be equally agitated when it realizes what a 'snow-under' of this type of cocoa exists, against the far-too-small production of fine and superior growths. The English market on the whole has been lulled to sleep and to rest content with inferior productions for some years past until, in extreme cases, even the girls, those notorious chocolate buyers, have come out of the shops without any sweets, as the quality offered was too low. More than once I have been asked," says the correspondent, in conclusion, "when is chocolate not chocolate? Quite a sensible question under the circumstances, but one which I do not pretend to be able to answer."

Thus speaks a London trade paper. Is the consumption of our tropical products, and especially cocoa, likely to prosper (just when everything should and must prosper if we are to pay our way) if this is the state of affairs at the hub of the Empire? If the hub creaks and drags, how can the Empire run easily and without friction and undue wear and tear? When there is plenty of grease to ease the running, why not use it?

Coming now to figures, Havre has at last started on the way it should go, and never have left, by showing an increase of 21,000 bags in stock. This is entirely due to some 22,279 Trinidads which were cleared and entered last month, against 8,731 bags delivered, so that does not say that the spurt will be repeated in April. On February 28th Havre had 10,352 bags on hand; during the month she received 31,585 bags and delivered 10,235, leaving her with 31,702 bags as under:—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
<i>Havre Stock, March 31st—</i>				
Pará ...	—	145 to 150	1,584	127 to 130
Bahia ...	4,560	135 „ 145	11,042	126 „ 134
Venezuela ...	3,291	148 „ 185	10,537	127 „ 175
Trinidad ...	17,319	146 „ 155	20,521	128 „ 134
Grenada and O.W.I.	2,613	142 „ 150	13	122 „ 126
San Thomé ...	4	138 „ 145	1,176	120 „ 125
San Domingo ...	—	130 „ 140	1,923	120 „ 124
Haiti ...	1,611	125 „ 135	3,426	114 „ 120
Accra ...	1	120 „ 130	6,176	114 „ 120
Guayaquils ...	2,048	142 „ 152	12,808	135 „ 140
Divers ...	255	—	4,501	—
Totals ...	31,702 bags		73,707 bags	

Anyone used to Havre in pre-war or in early war days must be struck with the "make-up" of this stock, no Pará or San Domingo kinds at all, only four bags of San Thomé and a single bag of Accras, when there is so much of these two growths elsewhere. Besides the above, however, another 81,835 bags are waiting to be landed and cleared, including 21,665 more from Trinidad and 4,574 from Grenada, both per *Crown of Cadiz*, and 47,158 bags from Bahia. A Guayaquil boat and one from Para are also about, but I am not yet aware what they have on board. Havre, therefore, is much better off for cocoa than she has been for some time, and as the war recedes to the background, it is to be hoped that the clearances will be made at a quicker rate than hitherto. I wonder if Bordeaux has as much cocoa as Havre in proportion to its visible stock waiting to be landed?

Against this the London figures ran:—

London Stock, April 12th—	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	13,243	14,888	17,709	14,781
Grenadas ...	9,731	25,191	21,000	17,165
Other W.I. ...	5,738	11,476	28,139	4,382
British W. African	39,383	60,193	41,579	26,712
Portuguese African	7,551	4,734	23,902	13,336
Cameroons ...	476	4,867	16,976	5,045
Ceylon and Java ...	14,007	23,850	30,115	25,262
Guayaquils ...	29,016	43,385	66,004	22,316
Bahia and Brazil ...	1,011	4,659	8,947	2,381
Others ...	2,785	4,253	8,677	3,993
Totals ...	122,941	197,496	263,048	135,423

The Lisbon figures are not worth talking about, except to say that the stock has dropped from 64,488 bags at the end of February to 39,842 on March 31st. Trinidad continues to ship heavily to France. Besides the following, the *City of Seville* is also taking a big parcel, 30,000 bags maybe. New York is slowly creeping up to the high parity created by the French order, but the United Kingdom is no good, and will continue to be so, until the restriction on prices is removed. For the five months ending February 28th Trinidad exported 113,307 bags (85,176 to France), against 77,872 last year (2,100 only to France), and 133,563 bags in 1916-1917 (49,392 to France).

I was glad to see that the consumption in the United Kingdom continues to be good, although the war is over. In February only we received 15,574 tons, against 3,166 last year and 13,189 in 1917, and took into home consumption 6,786 tons, against 5,811 last year and 5,183 tons in 1917, whilst the figures for the three months amount to the following. The exports were all sent off during the last week in March:—

Raw Cocoa Movements in the U.K.—		Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Mar. 31st. Tons.
Jan., Mar., 1917—		29,474	15,296	3,311	49,900
„ 1918—		8,529	16,220	382	36,300
„ 1919—		39,645	16,500	362	46,250

Incr. 31,116 Incr. 280 Decr. 20 Incr. 9,950

Out of the 39,645 tons of all growths imported, no less than 31,885 tons, or 80 per cent., came from British West Africa.

The shortage of sugar is not tending to encourage consumption, and if the shrinkage in output (of sugar) is likely to increase, as we are urged to expect—well, the cocoa consumption curve will go accordingly. France, Belgium, and Italy especially are being hit. Stocks in America are said to be decreasing, and that is possibly why prices are increasing. “During the next few months,” reports Messrs. Theo. Vasmer and Co., “we look for considerable seesawing of markets. It is officially announced that the blockade is lifted as far as Austria is concerned, and that goods may be sent to territories in Allied occupation, consequently we have to look to the entry of these countries into the market, in spite of their talk of lack of sugar, and already we attribute large transactions in certain overseas markets to that quarter. Holland, who only received 2,384 tons last year, against a normal consumption, say, 30,000 tons, should appear in the market as soon as the blockade is lifted, and so will the Scandinavian countries.” Large as the output is, when the full post-war demand can make itself fully felt, it will probably be behind the demand between now and the end of 1920.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 5.]

MAY, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:
"CINERARY, LONDON."

Telephone:
LONDON WALL 3151.

British Colonial Cane v. Continental Beet Sugar.

Now that we are to have preferential tariffs, those interested in the matter should hunt up the nearest file of the *International Confectioner* of New York, for this paper, in its January issue, published an article that was evidently written some six or nine months ago, but which could not have appeared at a more timely moment than when it did. With the heading and sub-heading of

BRITISH COLONIAL SUGAR.

*Will the British Public Agree to a Preference Duty in its Favour?**

our American contemporary, after calling attention to the way that the American financier is finding out that extensive cultivation in Cuba does not pay, and that an intensive system with much more cane per acre must be substituted if the big *Centrals* are to prove remunerative, then goes on to say: "As has already been pointed out,† India, if properly equipped, could be made to produce on its present acreage a surplus of sugar; more than enough, that is, to satisfy its deficit of 800,000 tons, and sufficient even to satisfy Great Britain's needs were the brains and ability present in India that have done so much of late for sugar production in Cuba and Java‡ . . . If this opinion were shared by the public in the United Kingdom, it might cause them to be less tolerant or sympathetic towards those centres within the Empire which could produce large crops of sugar at a comparatively low cost so far as their natural resources and conditions are concerned, but which do not do so because of the shortcomings of the owners of the land."

Here is a matter that merits the closest attention. Having been published in so well-known a paper, we trust that it will be brought before the attention of the "men who matter," and receive from them the consideration that is its due.

Attention was also called to the relative importance of cane and beet sugar in the *Agricultural News* of January 11 (p. 3), where we read in the two concluding paragraphs that "In the work of reconstructing industries after the war sugar will play a large part, and the question of the production of cane sugar will

* The new duties, with the preference for British produce, will not come into force until September 1st. Tea on June 1st.

† In "The High Price of Sugar," TROPICAL LIFE Publishing Department. Price 1s. 3d. post free.

‡ See April issue, p. 61, where it is stated that the output of sugar in India promises to be far behind the normal just when it should be ahead of it.

CONTENTS.

	PAGE
British Colonial Cane v. Continental Beet Sugar	65
What of the Pacific Islands?	66
Sisal for Selling.—No. VIII	67
Feeder Lines for Main Railways	69
The Coco-nut World.—By F. Soulier-Valbert	71
"Tropical Life" Friend.—No. 167	72
Agriculture in the Tropics for ex-Soldiers	73
Firms Who Helped Win the War	74
Tobacco Planting.—No. L.—Planting in the F.M.S.	75
Trade, Politics and Finance	76
The London Cocoa Market	78

be a vital one for many of our colonies. Sugar production in British colonies has been at a great disadvantage in the past in its struggles to compete with beet sugar, a struggle which hinged, not so much upon the qualities of the respective sugars, as upon the fiscal conditions under which they were produced and marketed. Now that these disabilities are to be removed, it is very undesirable that any undeserved stigma should attach to cane sugar, or that there should arise a preference for beet sugar, on the part even of some British manufacturers, based on erroneous grounds.* A body of prejudiced purchasers in the United Kingdom might be a source of serious danger to the colonial sugar industry.

"It would be an acceptable and useful national service if one of the associations now springing up in England for the development of the colonial sugar industry and the investigation of sugar problems were to take up this question, investigate it thoroughly, and give wide publicity to the results of the investigation as soon as possible. It is to be remembered that the consumption of sugar in the major industries concerned with the production of jams, confectionery, condensed milk and allied commodities uses a very large part of the supplies imported into the United Kingdom; consequently, anything working to the detriment of cane sugar in this connection is a matter of grave concern. Mere declamation or the assertion of the merit of one kind of sugar as contrasted with another will not suffice; the matter should be thoroughly and carefully investigated," and when proved, if in favour of cane sugar, let the fact be widely published. If beet sugar, at the moment, should prove to be more evenly satisfactory, then let the defects in the cane sugar be done away with, as we feel sure can be done.

The *Agricultural News* and the supporters of cane sugar may be glad to know that in all probability the matter will again be discussed not only in America, but in a London trade journal, and also in a Southern Indian monthly which has already published several articles on Pan-British sugar production.

What of the Pacific Islands?

THE amazing suggestions, made by pro-Germans and pure Germans, that our chief enemies should again be allowed to fatten themselves on the islands in the South Seas, renders the appearance of a handbook on "The Pacific Islands," published by Messrs. McCarron, Stewart and Co., Ltd., the printers and publishers, of 22-25, Goadsburn Street, Sydney, New South Wales, a very timely and useful work of reference. On his account we hope it will enjoy a widespread circulation, for it has much to tell and tells it well. Unfortunately the names of no agents are given at which copies of the book can be obtained outside Sydney, but we are arranging to have a supply

* The article in *The International Confectioner* might have been in the mind of the writer in the *Agricultural News*, for both papers dwell on statements made by at least one large consumer in the United Kingdom, as to the superiority of beet over cane sugar, owing to its being less liable to behave unsatisfactorily on rare occasions when used in jams and confectionery, &c.

for sale as soon as possible. The book, which costs 10s. 6d., or about 11s. post free, runs into some 300 pages of clear, well-printed type, and contains long and useful lists of chief residents and useful men at the various centres; it is also freely interspersed with advertisements which are not objectionable, but give you a better idea of the "ins and outs" of the case, and by their illustrations help to make up for the lack of photographs in the book proper.

Being interested in coco-nuts we naturally ran through the notes on the various islands to see what the book has to tell us on this industry so inseparably connected with these sunny fertile little centres of civilization and savagery so strangely mixed together.

British New Guinea is returned as having had only 992 "whites" on June 30th, 1916. Here at least must be plenty of scope for further development with white brains and white money in tactful collaboration with the natives. Tales are told of the gold found on the islets off British New Guinea, and how in Samarai, in the China Straits, the curfew sounds at 9 o'clock each night, when all natives must go to and remain at their homes until daylight. One wonders why?

Much could be learnt as to the soil, water and climatic requirements of the coco-nut palm by a series of carefully compared investigations carried on throughout the Pacific Islands. Such work would surely teach us, once and for all time, what the palms must have, what they like to have, and what they do not need at all in the shape of soil, &c.

At times all that the palms seem to want is water, with some solids in which to stand up whilst the water flows past, never standing still, and washing their roots. These roots send out hundreds of sucker-like tentacles to draw in what water they need, absorbing the solids as food, and later on expelling the moisture through their leaves. As shown in "Coco-nuts—the Consols of the East" (p. 527 of the second edition), roughly speaking, the meat taken from unbroken or undried ripe nuts contains fifty per cent. of moisture, so that if ten per cent. is left in the copra for shipment, forty per cent. has to be removed by drying. This means that if the meat of 1,000 nuts weighs 647 kilos, say 650 to facilitate calculations, then 260 kilos, or roughly, a quarter-ton of water, has to be evaporated out of every thousand nuts to be treated. At this rate 1,000,000 nuts would mean the removal of 250 tons of water. We say this in thinking of the Laughlan or Lachlan Islands, which possess a plentiful supply of water, but beyond that these islands seem to be formed of nothing but sand on the top of coral, and to grow nothing but coco-nuts, which apparently flourish and like such conditions. This proves how little this crop really does need to grow, flourish and yield beyond flowing water in the subsoil and its ever-changing supplies of plant food which would otherwise go out to sea and be lost. The coco-nut palms see that this does not happen. It is not what the trees get, but the way in which it is given them that seems to count. Does anyone disagree with this suggestion?

The bay attached to Woodlark Island, or Murna, said to be the chief goldfield of New Guinea, must be very pleasant to gaze upon, for it is described as

extending for miles to the *eau-de-Nil* coloured waters of the coral reefs, and we all know the beautifully delicate shades of such waters as they ebb and lap against the coral. So it comes about that the coral islets—picturesquely described as ocean bouquets—have an even more beautiful setting, so it is claimed, than the famous inland sea of Japan.

One of the most, if not the most, systematic attempts at coco-nut planting throughout the entire New Guinea group has been made on the all-but-invisible-on-the-map islands known as the Conflict Group, seventy miles distant from Samarai. Here on Panassesa, one of the islands, over 10,000 coco-nuts have been planted in pits three feet deep (probably three feet cube), into which the leaves and rubbish generally are swept. Such trouble and enterprise deserves success; we trust that it will come.

The total exports from the New Guinea Group, including the above, for the four years, 1912-13 to 1915-16, included £74,600 of copra, £18,500 rubber, (£14,846 in 1915-16 alone), and £20,000 of hemp.

British inertia and German penetration are usefully compared when discussing the Bismarck Archipelago, especially regarding New Britain, from whence our old friend Mr. (now Major) Howard Newport, formerly of Cairns and Kamerunga State Nurseries in Queensland, writes us letters. New Ireland is described as possessing immense numbers of coco-nuts, but no idea is given as to how many. The Purdy Islands are well wooded with coco-nuts, and the Anchorite Islands, inhabited by a race somewhat resembling Chinese, are also said to be thickly covered with these palms. Coco-nuts are cultivated by the 400 to 500 inhabitants in the seventeen Hermit Islands. On Marqueen, or Mortlock, Islands of the German Solomon Group, the inhabitants, about fifty in all, live on fish and coco-nuts, as "we" have done, and when well perpared we found it quite nice fare—for a few days. Another island, known as Sir Charles Hardy Island, is well inhabited and thickly wooded with coco-nuts.

Coming to the British Solomons, one learns that Ysabel received its name as far back as 1568 from the Spaniard Alvaro de Mendana, who called it after his wife, Donna Ysabel de Barreto, who went to visit the island (from Peru) with her three brothers in 1595, but who do not seem to have reached that group. So late as 1896 even, it seems as if only a hundred acres were under cultivated coco-nuts in all the British Solomons Group, but it had then been generally recognized that the Solomons were eminently suited for the systematic cultivation of the palms, and we know that since the establishment of the British Government the laying-out of coco-nut plantations has proceeded apace. The trees as a rule, we are told, are planted on the quincunx system, thirty-three feet apart, giving fifty trees to the acre. The Solomon Islands exported 41,569 tons of copra during the nine years, 1908-9 to 1916-17, mainly, if not entirely, native-grown produce. Now that the "white" plantations are coming into bearing the above figures can be expected to greatly increase. Nearly all the trade is done with, or through, Sydney, N.S. Wales.

A less attractive theme is struck when we come to an island that is not English or German. Had it belonged to the latter one would not have been surprised at the report of the way in which the natives

are treated. Since France has freed herself to some degree of the priest and convent parasites who too often prey and fatten on the hapless and oppressed (what tales some of the fanciful convent-made *lingerie* worn by fine ladies and fast women could tell their owners were they able to speak), why should such oppression be allowed to run rampant in the French Pacific as the late H. H. Romilly reports when speaking of Wallis Island? "I never saw so priest-ridden a place," he wrote; "two-thirds of the population were constantly working for the priests, building churches which were not wanted, as they already have more than they could use; and convents for the sisters."

The natives are much like the Samoans in appearance and language, and probably came from that group, as the distance between the two places is not more than three hundred miles. They try to escape at any cost from their island. Every ship that goes finds several canoes waiting outside the reef, although the natives know that if they cannot get on board a certain flogging awaits them on their return for having made the attempt." Why these floggings? Who orders them? One wonders if the authorities in Paris know of this.

What a curse the priests at times have been to the coloured races. The Jesuits with the *Misiones* in the centre of South America, the Spaniards in the Philippines and Cuba. Since the time of the early Spaniards, in the days of Pizarro, when the battues, sanctified by the Church, as in the case of the priest Valverde (see TROPICAL LIFE for December, 1912), who first encouraged the Spaniards to kill Atahualpa and the Peruvians in the square of Coxamarca, and then absolved them, what cruelties have gone on. We hoped, however, that these had long since ceased. The extreme cruelties may have done so, outside German rule, but still these floggings are not too pleasant to think of.

Sisal for Selling.—No. VIII.

(Continued from March issue, p. 35.)

SOILS AND CLIMATES. LYSTER DEWEY AND FRANK CONTER'S VIEWS.

MR. LYSTER DEWEY is a giant among the modern authorities on sisal. In his well-known reprint (from the American Year Book of the Department of Agriculture for 1903) on "The Principal Commercial Plant Fibres," he tells us that the sisal plant requires for its best development a soil composed chiefly of limestone and a warm and comparatively dry climate. Clear, dry weather with bright sunshine is required to dry and bleach the fibre, while in moist, rich soil or in a moist climate the leaves develop too large an amount of pulp in proportion to the fibre.

Discussing sisal soils and conditions of growth, Mr. Frank E. Conter, in his *Bulletin* No. 4 of 1903 of the Agricultural Experiment Station, Hawaii, tells us that the said plant will grow in tropical and sub-tropical countries in any well-drained soil anywhere from sea-level to frost line. When planted on rich soil and given some care, the plants grow rapidly, attain a large size, and do not throw up "poles" until seven or eight years of age.

"Plants which grow rapidly, as when planted on rich, moist soils, produce larger leaves, containing a larger percentage of water and a smaller percentage of fibre than plants which grow more slowly on comparatively dry and sterile soils. However, in such cases, even though the percentage of fibre is less, the greater size attained by the leaves enables the planter to secure more fibre per acre on comparatively rich, moist soils than on arid ones.

"Continuous planting of sisal on the same soil exhausts the available plant food. On such soil the plant makes slow growth and requires a longer period to reach maturity. Coral rock soil under cultivation in Yucatan in 1832 produced plants giving the first crop two years after transplanting, and maturing in ten years. During this period (of eight years) the plants gave an average return of twenty-three leaves per annum, or about 750 lb. of commercial fibre to the acre. Compare this with the reports from the same locality in 1902, which state that the annual yield is only from twelve to fifteen leaves, and that the returns given would indicate a probable annual yield of only 400 lb. of fibre per acre. This emphasizes the fact that it does not pay to plant sisal on the same land for an indefinite period. Neither is it commercially profitable to choose for a plantation land which is too dry or too sterile."

As Mr. Conter's pamphlet is fifteen years old, we may be permitted to quote the following figures which he included: The plant, he tells us, feeds most heavily on lime, magnesia, potash, and phosphoric acid. When it comes to a time that manures and fertilizers have to be added the above must be borne in mind. That the statement is correct is at once apparent by a glance at the two following tables:—

SOME SISAL ANALYSES.

	The green leaves contain* per cent.	The fibre contains† per cent.
Moisture	89.58	11.75
Dry matter	10.42	88.25
Minerals...	1.135	2.24
Nitrogen	.098	.084

* Boname of Mauritius. Rapp. Annuel, 1901, p. 58.

† Dr. E. C. Shorey. Board of Health, Hawaii.

	The ash of green leaves contain	The ash of fibre contains
Silica	.56	.442
Chlorine	.28	.888
Sulphuric acid	.88	.784
Phosphoric acid	3.29	2.605
Lime	33.40	36.247
Magnesia	15.37	1.449
Manganese	—	.151
Potash	18.80	15.776
Soda	1.42	1.297
Iron	.69	—
Carbonic acid, &c.	25.31	37.595

Regarding water content and soils generally, the following note by Mr. Conter has much that is useful, and very useful, in it:—

"Perrine (in 1838) states that the soil around Merida, the leading sisal-producing district of Yucatan, is composed of arid, cavernous limestone, and that in the whole region there is not a single running stream. Mr. Charles R. Dodge, writing in 1902, of the same region, describes it as being barren of soil, the sisal plants often being propped in place

by small stones or stuck into crevices in the coral rock. The adaptability of both Yucatan and the Bahamas to the cultivation of sisal is apparently due as much to the climatic conditions as to the soil; in other words, proximity to the sea and high temperatures with a low rainfall are quite as essential as suitable soils."

We have already stated that light showers are most acceptable to the sisal plants, and Mr. Conter shows why this is when he tells us that the leaves of sisal gather water from the dew or rain. This water flows down the furrow of the leaf toward the stalk, and is taken up by the outlets at the base of and in the axils of the lower leaves. It is also absorbed directly by the growing tissues at the bases of the leaves. The plant, therefore, requires a moist atmosphere or heavy dews. Light rain is very beneficial. The roots are most sensitive to moisture. A field subject to overflow, or soil liable to remain saturated with water for any considerable length of time, is unfit for a sisal estate. Heavy clay soil, in baking and cracking open, breaks and otherwise injures the spreading roots of the plant and greatly checks its growth.

On the other hand, on a broken and porous limestone or coral soil, under the influence of a moist atmosphere and a high temperature, subject only to moderate changes, the sisal plant grows well, producing the largest quantity of leaves with a large percentage of high-grade fibre.

Alkaline chlorides, still quoting Conter, like chloride of sodium (common salt), tend to increase the cellulose in plants at the expense of starch and sugar. Alkaline salts are usually present in a greater proportion in the soils of dry regions than in soils of humid regions. In the latter case the mineral salts are washed out in the drainage waters. Hence, theoretically, a fibre plant, such as the sisal, should be cultivated in dry rather than in humid regions in order to secure an increase in the amount of fibre.

(To be continued.)

ACCORDING to the *Board of Trade Journal*, a tract of 25,000 acres is to be utilized in Florida for the purpose of planting and exploiting sisal on a commercial basis.

Already 1,000 acres of this land have been cleared, and 750,000 henequen plants are to be set out immediately. These plants were placed out in the nursery about two years ago and have now reached a height of 15 in. In connection with this new industry for Florida, it is stated that in the autumn of 1921 the leaves will be cut from the plants and the fibre extracted by a decorticator, the plant and machinery of which will be the most modern procurable.

The henequen plant is well adapted to Southern Florida, where the true sisal (*Agave sisalana*) was introduced from Yucatan in 1826. Since that time the plant has been growing wild in certain parts of the State, but no effort has been made to exploit it until the present decision to cultivate it on a large scale.

At the present time the United States imports over 600,000,000 lb. of sisal annually, costing the farmers

over 100,000,000 dols., each year. Before the War sisal was sold in the United States at about 6 cents per lb., while to-day it is bringing 20 cents per lb. It is stated that each acre of land will produce about one ton of fibre, making returns of some 400 dols., or £80 per acre.*

Feeder Lines for Main Railways.

EVER since we first started to write on tropical development, especially within the Empire, we have steadily urged that a much more liberal network of subsidiary transport facilities be laid as required to feed the trunk lines of railways or big river systems. Good roads, cable-ways, light railways, motor lorries, motor-boats, each and all have been asked for by us, as the need for their assistance became more pressing and the output of such accessories was increased, so that the cost was cheapened, and thus caused their adoption on a widespread scale to become a commercial and—let us add—a politic possibility and necessity. Germany always realized this, and the fact that she did has benefited her in two ways. Firstly, by giving her colonies the advantages of such an excellent transport system, for war as well as for peace, and secondly, by establishing and developing in the midst of the Fatherland flourishing establishments that have thriven and done good business both for the Fatherland and themselves throughout the world. At present this country lacks such support, although we have the nucleus of far greater possibilities for development than ever Germany possessed. She came to the front in spite of the difficulties she had to face; we, maybe, lag behind because things everywhere have been too “darned easy” for us.

Those interested in the matter may remember that our editor addressed a letter to the *Engineer* on the subject, which that paper was good enough to include in its issue of December 29th, 1916. This brought us quite a number of communications, catalogues, &c., on the subject both from engineers specializing in light railways and from readers of TROPICAL LIFE who had seen the letter, and wrote to say how glad they were that it had appeared. The *Engineer* itself drew our attention to their issue of November 24th last, in which it was stated that a new 1915 company, Light Railways, Ltd., had been formed to deal with the exports of all materials connected with light railways, the special object being to supplant the enormous quantities of such goods of German origin which went out to colonies previous to the publication of our letter.

We must own that after an interval of three years we have not yet “struck” Light Railways, Ltd., so that but for the above statement we should not know that such a firm was, or is still, in existence. It is the same with all our light railway engineers; they are very big concerns, very wealthy, and carry out big contracts for the Governments and big firms, but the rank and file do not know them by name even, and until they come to an understanding like Koppels

and Decauville did, and act in such a way that everyone knows them in the Tropics, we shall never replace German goods. So well have these enemy firms made themselves known that their very names are used instead of the term “railway”—you go by your Koppel way, or you lay down a Decauville system through the estate, which everyone knows means a light railway. We never heard such a term used for any leading maker in the United Kingdom. We will say more and claim that very few planters abroad could tell you who makes light railways in England. There are, no doubt, exceptions, but then here, as always, the exception proves the rule.

We are reminded of this by a leaderette in the *Australian Sugar Journal* on the return of Lieutenant-Colonel Fewtrell, D.S.O., to Sydney, N.S.W., after having been away at the Front. He has evidently returned greatly impressed by what he saw and assisted to do in France in the construction of light railways for military purposes. We wish that a dozen and even a hundred colonels of this description would be equally impressed, and then come to England and go to the Tropics to tell them what can be done with the help of light railways. How delivery can be hastened and cheapened, ocean vessels caught just as they are closing, and goods rushed through to markets whilst prices are still up in the air. All this and much more will have to be done when the War is over if Europe is to replenish her factory and home larders. As there will be no light railways to help—well, we shall all be able to sit up and watch the tortoise-like pace at which the produce will be moved down to the ports on the heads of men or women, or rolled down the road, or dragged by oxen and donkeys, as is at present done in too many centres.

Creoles in South America may have a mote in their eye called *dolce far niente*, but we are not free from the complaint over some things on this side. With regard to the need of laying down networks of light railways throughout the Tropics, we have the true biblical beam in our eyes which prevents our seeing and so realizing the need that exists for this handy aid for transporting our wealth from those who are stifling under the weight of their surplus to this side, where we are starving from the scantiness of our supplies.

“The description given by Colonel Fewtrell,” the *A.S.J.* tells us, “will at once be recognized by anyone who has ever visited a sugar-growing district in Queensland. The lines in France are 2 ft. gauge, and will carry locomotives up to 15 tons, which could take up to 200 tons of loading on the level, at from six to ten miles an hour. Canada, he told the Sydney reporter, is carefully watching the working of these railways; and the colonel thought they would prove a big factor in opening up much of our back country in Australia. It would probably astonish the newspaper which printed this interview, as it would many of its readers, to be told that already in Queensland there are many hundreds of miles of just such railway—probably not far short of a thousand; that besides conveying sugar cane to the mill, they are the chief means of communication throughout the districts concerned, goods and passengers being freely and safely carried. The pity is that our politicians, being, in the

* This we consider over-optimistic—at any rate, the usual run of planters should not build up their estimates on such returns.—ED., T.L.

nature of things, more concerned in the winning of votes* than in the opening up of the country, and residents in our agricultural districts being unable to see how much better it is to have a 2 ft. railway at once than to wait for years for one of 3 ft. 6 in., the narrow-gauge railway has never gained any advocacy away from the coastal areas. In what is known as the North Coast district, that is between Brisbane and Gympie, the dairymen and the fruit growers have recognized that, what is good for the transport of sugar cane may be made equally serviceable for other commodities.

"We believe it is a perfectly sound proposition that 2 ft. railways should be pushed out in advance of settlement into districts capable of development, giving the producer the advantages of cheaply getting their supplies on to the ground, with the other benefits of regular though comparatively slow communication. Men and their families would thus be spared the miseries of isolation; and in course of time, when progress demanded it, there would be justification for a more costly line. If, through any miscalculation, the settlement eventually proved to be in the wrong place, it would be an easy matter to remove the rails and sleepers, whilst the amount lost in the earthworks and bridges would be comparatively small. With the return of normal conditions it would be possible to build such lines in any moderately level country for about £1,000 a mile, or even less, which means that, whilst waiting for a return, the country would have proportionately less to pay in the shape of interest, and it would be possible to push out the lines at a very much greater rate of progress."

M. Soulier-Valbert, on the opposite page, as well as ourselves on pp. 73-74, discusses this same proposition if on somewhat different lines. All wish to see British settlers established wherever they can live with safety. One wonders whether many men, tram and bus conductors, &c., could not well be spared to help win the peace as they helped to secure it. Those who are willing to go and help develop the resources of the Empire must not be discouraged or hindered from doing so through shortness of cash. The well-to-do-stay-at-homes, with substantial and assured incomes paid out of the pockets of the public, such as town clerks or Government and municipal officials, also the ordinary "civvies," too often only a carpet or platform knight, when the question of Imperial development comes up for public discussion, who has (we refer to the "civvie") no idea of sacrificing his health or comfort for anyone, must be made to help.

In face of the recent cases on this side regarding the illicit use of cocaine, and the reports of its use in other countries, the following paragraph is not without interest. It is taken from the *West Coast Leader* of Lima, Peru, of January 18th:—

One of the products shipped from Peru which has suffered considerably as a result of the cessation of the War is cocaine. In October the price ranged more or less around £42 per kilo of 100 per cent., but the past three months has seen the price shrink steadily,

until at the present moment a loss of about £12 has been recorded with the market continuing weak.

About the only reason that can be advanced for this decline is that large quantities came into demand as an outgrowth of the War for use in hundreds of hospitals to alleviate the sufferings of the wounded. With the cessation of hostilities this demand naturally no longer exists, and the market is adjusting itself to normal conditions.

The Edinburgh Review (Longmans, Green and Co., price 6s.) for April, No. 229, has a galaxy of stars, but the first article, "The Future of the English Race," by the Dean of St. Paul's (Dr. W. R. Inge) and another on "Tropical Africa" by Sir Frederick Lugard, deserve the closest attention. We do not remember ever reading a more timely and well-worded article on our duty toward England and the Empire than that contributed by Dean Inge. We hope to have room in a future issue to do more than just name this valuable contribution.

A book that will "grip" and hold vegetable, fish and mineral-oil men of all grades is "Oils, Fats and Waxes," by Fryer and Weston (The Cambridge Technical Series. Vol. I, 10s. 6d. net, 26 oz.; Vol. II, 15s. 6d. net, 26 oz. The Cambridge University Press, Fetter Lane, E.C.4.) Volume I deals with the chemical and general side of the case, runs into 280 pages, including the index, and has 33 illustrations and 35 plates. The second volume discusses the practical and analytical side, covers 314 pages, and has 69 illustrations. The information they contain is very technical but is put attractively, and is substantial, detailed and very exhaustive. Both authors are leading men in the lecture hall as well as in the laboratory.

BETWEEN November 19th and December 31st, 1917, better prices were paid, the official report tells us, for fermented cocoa in West Africa, at or near Lagos, and 70,414 lb. of fermented cocoa were purchased for £560 4s. 4d., or 134,452d. The price, received, therefore, did not come to twopence per lb. for fermented cocoa. One wonders what the produce realized when prices were bad.

It is reported that the opposition of the West Coast natives to the proposals of the Empire Resources Development Committee continues unabated. Our book "How to Pay for the War" deals exhaustively with this matter. In a debate in the Legislative Council of Nigeria, Mr. Ajasa appealed to the Government to oppose them. In the Gold Coast also an important resolution was passed at a conference, signed by several kings and chiefs and by two native unofficial members of the Legislative Council, and sent to the Secretary of State. It would, however, be far better to work along the lines suggested in our book, for Colonial Secretaries change at Downing Street. It is the members of the House of Commons that the natives of West Africa should interest in their case, and unless, or until they do so, they will do no good to their cause, as the "cat seems to jump to-day."

* A disease not confined to Australia by any means.—ED., T. L.

The Coco-nut World.

By F. SOULIER-VALBERT.

COCO-NUTS AND FINANCE.

The following views are solely those of M. Soulier-Valbert, not ours, but having given up so many years to studying coco nuts, *in situ*, in all parts of the world, everyone must agree that M. Valbert's views are well worth knowing at this critical stage in the progress of the industry, productive as well as manufacturing. We hope to be able to publish a good number of these articles, as we feel certain that anything M. Valbert has to tell us concerning the progress made by the Coco-nut and Vegetable-oil industries throughout the world will merit attention.—[ED. T.L.]

How, I hear you ask, can the nations who consume vegetable oils more quickly re-stock themselves by encouraging consumption? Would not doing so further tend to reduce supplies and not increase them? To this I will answer an emphatic No, for it is only by such an increased and permanent demand that you will encourage production on the extensive scale that the present needs of the world demand. Short of going to the Central Powers for their sugar supplies and dyes again, the world has found itself caught napping in their outputs; let us benefit, therefore, in these two mulls of sugar and dyes, and not add a third one by finding ourselves short of fats and grease. When Germany, Austria, and Russia are allowed to receive their share of the world's output, especially of coco-nut oil, present supplies are not likely to satisfy everyone, and in the endeavour to make such supplies as are available go round, prices will be forced upward to such a degree that the demand from the millions must be seriously checked and diverted elsewhere. This must be avoided at all costs, and the danger of it again shows that the only way to ensure large stocks is to encourage a big demand, and thus give producers that confidence which they will need if they are to feed all the mouths and factories that will be clamouring for coco-nut products. Lord Leverhulme has given us a warning of what to expect if something is not done. He also suggested a remedy, which could be elaborated and run on the English proposal for placing ex-soldiers on the land in England, viz., to start an estate with a central factory run by a trained and competent man, and to establish homesteads, i.e., small estates, with the necessary residence and buildings for ex-soldiers and others to settle on and keep the central factory supplied. At the start the ex-soldiers would work on the central estate for wages previous to taking up their own ten, twenty, or fifty acres as they become proficient, but all the time working under the guidance of the trained man at the central factory (see also p. 74).

Meanwhile, events are moving rapidly and conditions have been reversed. In the old days the query was: Who will be kind enough to finance the coco-nut producers and the industry generally? Now we hear that any suitable estate is at once snapped up, and that those who arrive late must go without. Moral: Do not be a late-comer in this field of enterprise.

If it were necessary to remind my readers that the coco-nut and copra industry was rapidly approaching the time when they will be able to entirely throw off the shackles of control, Messrs. Fischel's weekly report could easily be cited as a witness. Much

valued in trade circles, this useful circular disappeared during the dark days of official control, but has now made its reappearance down Mincing Lane. The first post-war number was dated March 25th, and even then it called attention to the steady demand for copra products from all parts. To-day the demand is keener than ever, and when more tonnage is available things generally will "hum" all round. This continued scarcity of freight-room has caused, even quite recently, important quantities of copra to be spoiled in the South Seas. In the face of this it is to be hoped that more boats will be forthcoming, and that they are, in fact, already available.

I know also, to my own cost, how, for two years, the steamers practically ignored the north-western ports of Madagascar. None of these inconveniences, however, have so far checked speculation, but have even seemed to stimulate it at times, and prices began to move upwards in spite of every "stopper." Prices now have approached the £50 a ton I long ago claimed they would reach in May, and the month is only half through whilst these notes are being written. Were oils to be completely de-controlled and allowed, like raw cocoa (which is selling at 128s. and 118s., against controlled rates of 100s. and 90s. respectively), to find its true market value, then copra would be well above the £50 line. Perhaps knowing this is why the interested buyers have schemed to keep, and succeed in keeping, the control on the price of oil to the detriment of the producers. There are those who claim that if prices run up too high controlled prices will come in again. To this I would answer: What do you call "too high"? and if you do cut back the rates in England, what proofs are there to make anyone believe that we shall get the copra here in future as we did in the past when we had the whole of the world's tonnage under our thumb?

Planters have been isolated and cut adrift from buyers too long to care for any particular centre, and so, at the least sign of another cut in rates, they will do all they can to go elsewhere, and this being so, who can say that they will not succeed?

Before I altogether leave this subject of the world's copra markets and their values and exchanges, may I be allowed to suggest, Mr. Editor, that you seriously consider a proposal that you should give up a column or a page (the two pages perhaps in the centre of your paper now occupied by the advertisements for your books) to start an Inter-Allied market report in the various currencies? In anticipation of your being willing to do so, I invite copra producers and shippers in the English, French, American, and other Allied centres to send in their notes and prices regularly for inclusion in your journal. In pre-war times Marseilles and Hamburg were the great copra and vegetable centres. In the post-war day all this must be altered, and Marseilles and London, Hull, or other British port must secure trade. Such a report, therefore, as I am proposing would help to bring this about. So far as I can judge, some such scheme would be welcomed in France and throughout her colonies; and I feel sure that it would meet with equal approval under the Union Jack and the Stars and Stripes.

(To be continued.)



"Tropical Life" Friend.—No. 167.

MR. JACK WALKER.

The "Daily Graphic" is holding an Exhibition of the Best Pictures of London's Famous Cartoonist.

WE have much pleasure in informing those of our readers fortunate enough to be in London that Mr. Jack Walker, the well-known cartoonist of the *Daily Graphic* (also of *TROPICAL LIFE* and of the six illustrations in our book "How to Pay for the War") (whose portrait shows him in the uniform of the Special Constabulary of London, of which corps he has been an active member since the outbreak of war), is "at home" to his many admirers and friends at an exhibition of his original cartoons, which is being held at the *Graphic Galleries*, 190, Strand, opposite the magnificent pile known as Australia House. The cartoons are drawn in "line," plain, or tinted, if you know the meaning of these technical terms, and offer an array of most attractive pictures to study both from an artistic, political, or humorous point of view. Much can be learnt from such a gallery of up-to-date cartoons after all that had happened during the period covered by them.

A glance round shows pictures with humour, satire and often with deep meaning, until you are astonished that one man can turn out so many of them at the rate of at least one a day. Cartoons from this well-known artist when they have appeared in our pages have always attracted widespread attention. There is, however, a great drawback attached to them unless one is included in every issue, viz., once you introduce Mr. Walker to your readers, they do "grouse" so when, owing to lack of space or for other reasons, there is no contribution from him. Those which have appeared, however, show that his ability to "spot" points, the correctness of his views, and the amusing little side-lines that he introduces in all his pictures are the cause of this trouble.

The half-dozen cartoons from his pen which, having

appeared in *TROPICAL LIFE*, now illustrate our book "How to Pay for the War" (of which, by the way, a fresh imprint or edition may shortly make its appearance) are as important as any portion of the book, on account of the lessons they drive home so forcibly to those who trouble to study them. All this goes to confirm an already well-established fact that Mr. Walker's knowledge of details of our Imperial politics and economics must be immense. The present Exhibition is affording a great opportunity for the many friends that the cartoonist has drawn to himself to become possessed of one of his original drawings, for they, like the pictures in the Academy, are all for sale. But an early call is advisable, as they are not likely to hang fire for want of buyers.

It is, of course, in connection with his work in the *Daily Graphic* that "Our Friend" is best known. As this, now well known, connection was started in January, 1910, and has been running practically without a break ever since, it is easy to realize that some 2,500 of these pictorial comments on current political and military events have already appeared. Long may they continue. That Mr. Walker knew his lines, and hit the nail on the head exactly as it should be hit, has often been proved by the way in which the cartoons have been reproduced abroad, and especially in the countries or centres depicted in them, as, for instance, those dealing with reckless indifference of the Kaiser for the German people, which were reproduced in the German papers—after the Kaiser and the military party had lost power.

Recognized to-day as one of our leading satirists, as a hard hitter, but always above the belt, with plenty of pepper at times maybe, but always with perfect politeness, there may be those who for these qualities would place Mr. Jack Walker on the lofty plane occupied by F.C.G. of the *Westminster Gazette*. In our minds, however, "Our Friend's" sketches in the *Daily Graphic*, in the *Glasgow Citizen*, and other leading papers, since the war started, have done far more to sustain the interest of the public, along the right lines, in this Titanic struggle of might against right, than those of any other artists, not excluding Raemaekers.

We well remember when "Our Friend" first took up public propaganda work, in connection with the designing of posters for the Anti-Tea Duty League on the one hand, and the Brewers' Defence Association on the other. This work brought him closely into touch with the House of Commons and the leading politicians of those days, when "we" sat out long debates and heard Mr. Churchill "go" for Mr. Joseph Chamberlain over the Sugar Bounty Question, and the "Great Joe" hit back in his hardest style.

All the same, "Our Friend" is quite good in the real Art, with a big A, line. His 1909 exhibition of water-colours of Dutch scenery, shown at Leamington in 1909, resulted in nearly every picture being sold. Anyone short of a real artist would accordingly have run a second and a third show on similar lines and scooped in the "baubees," whilst extending his or her reputation. The fact that "Our Friend" never did so shows to what an extreme extent he possesses the true artistic temperament.

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

MAY, 1919.

Agriculture in the Tropics for ex-Soldiers.*

As we sat listening to the pertinent and useful remarks made by Professor Carmody, our thoughts wandered back to the Boer War and the period that followed. In those days we were very green in matters literary, having had no experience or training, but, for all that, such was the thirst for knowledge concerning tropical planting and development, that when we gathered together the crudely written articles that we had published here, there, and everywhere on the subject (including one on "Cocoa to follow Khaki," published in America), the demand for the book ("Notes on Planting in the West Indies, &c.") exhausted the two thousand copies printed in

less than a year. Of these over three hundred copies were bought by those who called at the office in which "we" are now writing these notes.

At the time we were not sufficiently experienced to realize the importance of this demand for a book, known only from notices and acknowledgments in the press, and written by an unknown author, who has since been told he could not even write the Queen's English. We wonder if H.M. Government realized at that time how hungry the ex-soldiers out of the Boer War were for information on the Tropics and their industries. To-day the same hunger exists, but now there are more sources at which this hunger and thirst can be satisfied, ungrudgingly and without payment. The Royal Colonial Institute is one, *United Empire* is another, and as the latter, which, of course, is the organ of the R.C.I., goes to each one of the 15,000 or 16,000 members of the R.C.I., this useful paper of Professor Carmody's, and the equally timely debate that followed, will go, we have the satisfaction of feeling, to that number of men and women, who possess more than the average proportion of interest in our Empire and the ability, and who will on that account be willing and able to explain to others all that the lecture means to those anxious to go forth and develop the resources of the Empire.

As was stated by one of the speakers, in comparison to all that could be and should be written and said on the advantages of the Tropics for those whose health and temperate permit them to sojourn there, the remarks made in any debate to follow such a lecture can but be as headlines to the column or more of matter that follows. On this account we must ask our readers to wait until Professor Carmody's paper is published in the journal of the R.C.I., the aforesaid *United Empire*, and only flourish a few headlines before them, as our space prohibits anything more.

Attention was called to the danger of buying a "pig in a poke." This is our term, not Professor Carmody's, who told us that the first cost of the land is of secondary importance. If the would-be buyer finds in any inhabited locality that land is relatively cheap, it is advisable to regard it with some suspicion. This is well said. To our mind the two great points to be ascertained before you even look at an area is that you have the labour and transport necessary to produce and move your crop to market. These two, labour and transport, are to agricultural industries as food and drink to the agriculturist himself. Neither man nor industry can exist without them. There are other troubles, but they can be evaded or overcome; lack of labour and transport cannot be.

The last speaker in the debate, following on some remarks that had just been made as to where the help should come from, suggested that Lord Leverhulme's plea in his introduction to our book on "Coconuts" might be adopted, and homesteads on roughly cleared and fenced lands placed at their disposal, to be paid for in instalments. Why should such a plan not be adopted? The speaker then went on to urge that the Home Government, the local Government (anxious to have its lands utilized and revenue increased), and the large manufacturers (soap, margarine, tobacco,

* Being remarks on a paper with the above title read by Professor Carmody, F.I.C., &c., late Director of Agriculture, Trinidad, B.W.I., at a meeting of the Royal Colonial Institute, on Tuesday, April 15th, Sir Daniel Morris, K.C.M.G., late Imperial Commissioner of Agriculture for the West Indies, and Member of the R.C.I. Council, in the Chair.

sugar, cacao, rubber, oils, flax, fibres, &c.) should all join together to finance these settlers, who in their turn could work as the cane farmers do in Trinidad, West Indies, for this or that central factory, or to supply the particular manufacturer over here who has specially taken him up. Such a plan would suit both sides as it does with sugar-cane. The producer is sure of a market and of the price he is to receive, which is based on a sliding scale. The manufacturer is sure of his supplies and what it will cost him, both most important items, and so such a plan must prove, if practical at all, to be cheaper and better for the manufacturer than if he were himself to go in for planting, as many have done, and more say that they must do.

The small individual owners (for these men will be actual owners unless lack of knowledge, care, or application causes them to be removed) will always produce a larger return per acre and at a lower cost, because it is to their benefit to do so, since they are paid by results and not by wages. The cost of expert managers, overseers, and wages clerks, &c., will be entirely saved, for the inspector of farms or plantations now available at all British producing centres, would be paid by the Department of Agriculture, and to them the farmers would apply for help as to cultivation on the one hand, and the manufacturer with reports of unsatisfactory or unevenness of output on the other. We have the men who want to go to the Tropics, we have the industries and the areas to which they can go; above all, we have the factories and markets sorely in need of their crops. This being so, surely the question of finance can be overcome and the lands roughly broken, and houses erected for the settlers until they can erect something more to their taste later on. This, as we have said, is only the outline or headline, the columns of details to follow can be written by any expert better than by ourselves.

Again, would not such a system of crop-farmers, if applied to rubber production, help relieve any slight irritation that may be felt by the big manufacturers in America at the agitation against their acquiring lands in British territory to produce rubber in competition with ourselves, just when the level of supply and demand tends to run each other rather closely, with supply more inclined to run ahead than one cares to see?

There are a number of rubber estates that do not pay, but if broken up into small holdings and the factory run as a central factory for all the planters, who must be British and preferably ex-soldiers, such concerns could undertake to supply the American manufacturers with the raw material they need, providing always that the latter financed the undertaking and that it was clearly understood that none but British subjects be allowed to enter into possession of such holdings with the idea of "buying themselves in" as soon as possible.

These and many other points came into our mind whilst listening to Professor Carmody and those who took part in the debate. There was a good, useful attendance, and no doubt everyone went off with as many, and even more, ideas than we did. This is why we believe that the lecture will prove so beneficial

to the cause of the ex-soldiers when it appears in print, for the organ of the R.C.I. indeed enjoys a far-flung and widely spread circle of readers, each one of whom is quite capable, and certainly quite willing, to help place ex-soldiers safely on to the land in the Tropics. Such a proposal should especially appeal to the million or so men in the years to come who will be "demobbed" when the Army of Occupation has done its work. Many of those now free of the Army have "jobs" to go to, whilst those who are tied up in the Army of Occupation will contain a larger proportion of those who will need help.

Firms Who Helped Win the War.

MESSRS. RANSOMES, SIMS AND JEFFERIES, LTD.,
ORWELL WORKS, IPSWICH.

WHEN the war broke out Messrs. Ransomes' works were as far removed from production of warlike implements or requirements as any firm in the country. Their products, famous throughout the world, were associated with agriculture, which is almost symbolical of peace time, though, as events proved, of very vital importance in the later years of the war. At the same time Messrs. Ransomes, Sims and Jefferies, Ltd., owing to the wide range of trades involved in the manufacture of their normal products, have been able to make a very large variety of war munitions. At first this was done under very considerable difficulties, but as time went on the arrangements of the firm were perfected and the production became very extensive as well as of the highest quality.

Some idea of the extent of their output may be obtained from the following figures, enumerating the production of the chief classes of munitions dealt with: 790 aeroplanes; 650 airship and kite balloon sheds, aeroplane hangars, &c.; 3,700 aircraft bombs; 1,000,000 shrapnel shell case forgings; 440,000 shell cases of the following sizes: 6-pdr., 13-pdr., 18-pdr., 4.5-inch and 6-inch H.E.; 2,500 star shells, 2.75-inch; 610,000 practice and proof-shot of the following sizes: 2-pdr., 3-pdr., 6-pdr., 12-pdr., 12 and 14-pdr., 15-pdr., 3-inch, 4-inch, and 6-inch; 3,000,000 shell and fuse components, such as burster containers, fuse sockets, fuse caps, adapters, fuse bushes, &c.; 5,000 general service and limbered wagons, water-tank carts, machine-gun carts, trench carts, &c.; 46 sets of bearer columns for submarine engines; 225 trench howitzers and 450 spare howitzer beds; 1,700 mines and 1,900 mine sinkers; 10,000 bombs for Stokes' gun; 400 sets chemical smoke apparatus for ships; 50,000 projectile and ammunition boxes; 200 depth charge throwers; 200,000 spare parts for wagons and carts, such as swingle-trees, drag washers, brakes, &c.

Asked about aircraft construction, Mr. Victor Bone, the works managing director, said that in 1916 the Government asked them to make aero engines, but in November of that year the firm undertook to make aeroplanes. This involved the erection of a number of entirely new shops at a large separate factory. As a nucleus they took the warehouse for threshing machinery, which was quickly added to and sur-

rounded by other buildings. By April, 1917, the first machine from a Royal Aircraft factory design was completed and in the air. It is interesting to record that this aeroplane was employed in the destruction of the Zeppelin at Theberton on the night of June 16th, 1917. The firm were informed later of this fact, and it was added that "this particular machine has given no trouble from the first, and is considered a very good example of its type." Mr. Bone mentioned that their aircraft factory has been frequently commended by the authorities for the efficiency of its lay-out and general organization.

As the Air Service grew the Government needed bigger sheds, and new designs were evolved by Messrs. Ransomes, and the buildings constructed; of these sheds there was a considerable output. Quite a number of them had been officially adopted as a standard by the Air Board and the Army. Some of them had as much as 150-feet span. Planters and others who also need such buildings might note that the latest types were so designed that the roof could be put together on the ground and lifted up into position bodily by means of winches fixed to stanchions. This facilitated the quick erection of sheds, avoiding the use of ladders and scaffolding, and this type of hangar became very valuable when bombing machines began to be extensively used in France.

As was pointed out in the article sent to India on the improvements in rubber machinery evolved by the needs of the war (see April, p. 58), Mr. Bone gave it as his opinion that the experience gained by manufacturers and employees during the strenuous period of the war will have an important effect on peace production. It had been shown how, by manufacture in mass, with appropriate organization and appliances, highly efficient and highly productive results had been attained, and the valuable experience gained under the pressing need of war would naturally have a stimulating effect on the peace production of the future from which so much is demanded—and expected. We would add to this the need for greater banking facilities on popular lines, so that all can help, the biggest and the smallest man, as asked for and outlined in our book "How to Pay for the War." Then progress will be made both over here, where the goods will be produced, as well as in the tropical and overseas markets, where they will be sold or bartered for local products. We cannot do without a better working understanding and closer co-operation between the factories on this side, but even given that we must still have financial assistance, also on co-operative lines, so that no orders need be passed by.*

* See p. 69 of "How to Pay for the War," where we say, "With 'the banking machine' we have asked for, a manufacturer, called A, can accept an order for a mill that costs £500 or £1,000, of which he actually makes only 25 per cent. He should, however, be able to go to his bank, who, once they approve of the firm giving the order, will be willing to assist the man to complete the work—that is, they send him to other customers to secure the parts, and the latter are paid for through the bank by having their accounts credited with the amounts due. Except for wages, no money would be needed, and when the machine has been delivered and paid for, probably A's account will be credited in the same way, and by then he will be busily engaged 'doing his bit' on orders secured by those (B. C. D.) who had recently been helping him."

Tobacco Planting.—No. L.

PLANTING EXPERIMENTS IN THE F.M.S. (*continued*).

(*Continued from February issue, p. 23.*)

As regards preparation and care of the seed-bed, the site selected for the seed-bed was on a gentle slope, but free from surface drainage. The beds are raised about 6 in. above the surrounding soil, and banked with boards. The width of the beds should be about 3 ft. to allow the seedlings to be conveniently attended to. A rich friable soil is made up by adding a quantity of burnt earth, wood-ashes, and a sprinkling of sand to the beds. Soils containing too large a proportion of clay should be made lighter and more open by the addition of humus matter.

Seed Sowing.—The surface of the soil is next brought to a fine tilth. As the tobacco seeds are very small, it is advisable to mix the seed with a small quantity of wood-ashes or fine soil, in order that it may be broadcasted with greater uniformity. An ounce of tobacco seed in good condition contains from 300,000 to 400,000 seeds. Seed of each variety is sown, each plot is then carefully labelled and divided off with planks. After sowing, the surface of the bed is flattened down with a piece of board to ensure the particles of earth being pressed around the seeds.

Shading the Seed-beds.—In America cheese cloth is used to shade the seed-beds. Shade of some description is necessary, and in the present trials a light cover, formed of "attaps," is laid over the beds on supports at 3 ft. distance from the ground. After the plants have formed several leaves, the shading is removed for several hours every day, and gradually reduced. This is done in order that the plants may become hardened, to enable them to withstand exposure to the sun after transplanting. Artificial watering is frequently necessary, especially should germination commence in a dry spell of weather. The seedlings are ready to transplant into the field when they have formed four or five leaves—they reach this stage in a month to six weeks from the sowing of the seed. On no account should the seedlings be allowed to become crowded, as such plants will never grow satisfactorily when planted out. All weakly plants are removed and weeding assiduously attended to.

Coming to field culture and the preparation of the land, all stumps are removed by means of a Trehwella monkey-jack or other extractor and the soil well pulverized. In the trials at Kuala Tembeling, the land had been previously well changkolled, but not manured. Two-foot paths are made at convenient distances over the land, and the soil raised in beds.

The distance of planting when transplanting in the present trials is 3 ft. by 3 ft. This should be carried out in the early morning before the sun becomes powerful. The plants are carefully shaded with small branches until established. It is generally necessary to water the plants once a day for the first two or three days, unless rain falls during transplantation.

Now we come to cultivation. In three weeks or so from the time of transplanting the plants receive a mulch of soil around the stems, and the surface soil is lightly stirred. These operations are repeated until

within two weeks of the ripening period, by which time the soil has been banked to a height of about 8 in. around the plants. All weeds are removed, and any sickly plants are replaced by fresh plants from the nursery. In about six weeks from transplanting the flower buds begin to appear. These are nipped off, and at the same time all lateral growths are removed. After disbudding, a number of suckers will make their appearance at the base of the leaves; these are periodically removed so as to direct the vigour of the plant into the leaves already formed on the stem. Basal leaves of small size are removed, the number of leaves that are allowed to reach maturity depending upon the variety of tobacco.*

Mr. F. J. Dupuis, the Manager of the Government Plantation, Kuala Tembeling—to whom credit is due for careful supervision of the experiments at that place—tried the effect of growing a number of plants under light shade. The practice of covering tobacco fields with light cloth is in favour in certain districts of Central America. Though a costly operation, this method often proves very profitable owing to the high prices obtained for first-class wrapper leaf. Too much shading, however, results in the leaves becoming thin and papery, and it is thought that the leaves produced at Kuala Tembeling under shade suffered from this defect.

(To be continued.)

Trade, Politics, and Finance.

MESSRS. LEVER BROS., LTD., recently invited the public to subscribe to another £2,000,000 of capital, this time in the form of 6½ per cent. Cumulative B Preference shares, the whole of the amount to be paid in by June 26th. Out of their authorized capital of £60,000,000 the company has now issued £17,230,392, so there is still a good margin to place out as and when required.

Messrs. Rowntree, the well-known cocoa and chocolate manufacturers of York, were also asking the public for capital, and offer an excellent investment. This is, so far as our memory goes, the first time that one of the four leading cocoa and chocolate firms has come on the market for capital. We are glad they have done so. If the public had money invested in the leading cocoa and chocolate concerns in the United Kingdom, it might then come about that we should equal and even exceed in quality that put out by competing countries. Why should we not?

Now that the excess profit tax has been halved, i.e., lowered from 80 per cent. to 40 per cent., we hope to see more money put into really good British undertakings, both to develop our resources abroad and also to manufacture the products into articles of commerce within the Empire, instead of letting Germany do the bulk of such work for us in both sections. If we have the money to buy heavily from Germany and pay her big profits for goods, often made from raw materials obtained within the Empire, as we were doing before

the war, we certainly can raise the capital necessary to finance concerns to manufacture such wares, metals, fabrics, dyes, food-stuffs, &c., in our own midst. Germany has many faults, but at least one advantage over us as regards national development and commercial expansion. The absolute company-promotion swindler who has worked such havoc in this country since the days of the South Seas Bubble was never even tolerated in Germany. Teutonic swindlers had to go elsewhere, many of them to England, "to raise the wind."

This being so now we are settling down to reconstruct the Empire, cannot we learn at least this lesson from our enemies, and see to it that all the money invested so willingly to push on the fortunes of the country goes to benefit our trade and not only a percentage? Toleration of the company-promotion swindler does the country a double harm, it encourages the brood to increase and attracts the worst specimens throughout the world to our shores, for no one else will put up with them, and it also diverts money from a useful channel to a downright mischievous one.

In future we shall need all the money we have for useful work; times ahead will be more strenuous than ever. Even such an item as the heavier-than-ever death duties included in this Budget must be watched, for it is too early yet to say what effect they may have in helping to break up the huge fortunes held in this country, especially by Germans, naturalized or born in our midst, and so cause several owners to appear at least on paper, instead of only one very big man. Those who think otherwise should read the article by the Dean of St. Paul's, Dr. W. R. Inge, in the April number of the *Edinburgh Review*, entitled "The Future of the British Race."

The proposal made that the new loan now being talked of should be a 4 per cent. one, issued at 83 or 84, gives those who have any knowledge of finance a good insight as to how matters stand to-day as regards supply and demand for money. When, therefore, men wish to float companies for colonial enterprise, or to come to London for cash to develop our resources, this is the note of the tuning fork to which they must all "pitch" their instruments, no matter what the tune which is to follow.

We understand that since the worst has been known of the Budget, our markets, especially the Stock Exchange, have been extremely busy. We hope that plantation rubber interests may now have a good time; the shareholders deserve it, so does the article itself, for rubber has been a Haig among tropical products in helping to win this war. The reduction in the excess profits tax should alone make rubber improve considerably, and when one remembers what a "rest" the trees have had on the leading estates, one feels that there is a good time coming for those who are not afraid of work and facing the music of post-war trade anxieties. Rubber men in the East have never shown signs of being so.

So much has been said and written about the harm done to coffee by the frost in Brazil that, as the *London Observer* reported, the whole position of affairs in connection with the Brazilian coffee industry

* In the original, one of the tables, No. VIII, gave particulars of the leaf growth.

was discussed at a recent meeting of the London and Brazilian Bank, when the chairman claimed that the reports about the frost had been exaggerated. None the less, the coffee crop for 1920-1921 promises to show, we are told, a total of only 7,000,000 bags, against a normal average of 10,000,000 to 11,000,000 (and a maximum of 19,000,000) bags. These estimates, therefore, give an idea of what harm has been done. Forty per cent. of young trees, say under five years old, are said to have been destroyed.

Nitrate shares will have a brighter outlook, for the long delayed orders now clamouring for attention run a chance of being executed, since India is free to send the bags and Chili the nitrate, so it only remains for fair freights and steady shipments to be arranged for the tropical and temperate zones to draw very large supplies from the distributing centres.

It is interesting to note how Herr Dernburg (whose world-wide experience in connection with Germany's colonial dream of an overseas expansion is well known) and others are trying to talk down Germany's wealth. The country could pay £50,000,000,000, if given time, without turning a hair, and then the bulk of the money would only be equal to what the peaceful penetration tactics of Germany have enabled her to suck in from England, from Latin America, the United States, and elsewhere. It is to be hoped, therefore, that the general public will not be misled by this, the latest tale of woe of our chief enemy. The German people may have been pinched, but not as much as they deserve to be. The Junker and wealthy class have, however, more money than ever at their control, thanks to the profits they have made out of the war, whilst in German industrials we must remember the fat dividends that they have declared, as the 22 per cent. of the Hanover Excelsior Rubber Works, and the 18 per cent. of the Hackethal Wire and Cable Works, also of Hanover. The sooner the Allies get a share—their share—of all these fat profits, the better for the future peace of the world, if it is to be a lasting one.

The *India-Rubber Journal* of April 19th called attention on p. 12 to a patent taken out by one Norton Gregory (No. 123,114) of Tacoma, Washington, U.S.A., for the manufacture of rubber from fish scrap. It is worthy of attention. Even the least valuable fish or fish scrap contains approximately 85 lb. water, 10 lb. solids, and 5 lb. oil. (As smoked haddock was recently sold at over 2s. per lb., what a valuable article water has been at times.) The entire aggregated mass of fish or fish scrap is utilized with 10 per cent. to 25 per cent. of sulphur. In the process the original constituents of the base are said to lose their identity, and there results a substance that has many of the characteristics of rubber, and which may be rolled out in sheets, moulded into various forms, compounded, and vulcanized. It may also be used advantageously in compounding with rubber, displacing a large proportion of the rubber usually used.

Talking of rubber reminds us that the report of the Kajang Rubber Estates, Ltd., Edinburgh, shows that on the Kajang division of that property the trees have been thinned out to 66 per acre. How very different to the 400 trees per acre that we were assured at the

start (when we protested against anything over 200, and in preference 100, trees to the acre) was the correct number to plant. Experts of mushroom growth, when the next boom of a tropical crop comes along, should be relegated to the background until they have attained a little knowledge. Those who have been associated with tropical planting for several decades may become prejudiced, but they also acquire practical knowledge as well, and many of them were as free of prejudice and ready to give all plans a chance, as any of the "mushroom" experts who did so well for themselves and so badly for the public out of the rubber boom.

Cotton, fibre, and other producers of bulky articles for export should get into touch with Messrs. Hollings and Guest, Ltd., of Birmingham, and secure particulars of their new hydraulic baling and packing presses. With freights at the height that they are likely to be, these powerful appliances will come in handy. Some exporters who feel that they have been over-squeezed by the Government or private shipowners in the past would, we feel sure, like to secure one of Messrs. Hollings and Guest, Ltd., best and strongest, in which to give the freight-controller or shipowner a little friendly squeeze in return.

The mail just in from the West Coast brings the news that Mr. Frank Evans, who has charge of the ex-German plantations, in the Cameroons, was leaving for Europe on April 6th, via Duala, after nearly four years' continuous service on the Coast without a break. He will probably have a look round in France, and then we hope to see him in London.

Coming to the London market, now basking in the sun of preferential tariffs for British colonial produce, a firm tone has reigned throughout and good business done—all impediments and uncertainties considered—at full to higher prices, especially with coffee, cocoa, vegetable oils, &c., whilst silver jumped up to over 4s. 5d. per oz. The combined stock of sugar in London, Liverpool, and the Clyde on May 3rd was returned as being 151,703 tons, against 125,415 last year, and 38,022 tons in 1917. The Brazil coffee receipts continue to be low, say 8,100,000 bags to date, against 13,719,000 bags last year, and 11,433,000 in 1917. Cotton was at 17·14d. per lb. on May 10th for spot, with lower rates for future delivery. With shellac, T.N. Orange sold at 250s. to 255s. c.f. and i. for May-June shipment, and up to 285s. for August delivery, whilst A.G. Garnet blocky was worth 235s. to 240s. Copra was at £56 for fair merchantable to London, against £57 for Marseilles, as well as Antwerp. Copper is worth about £77, and tin £230, with a tendency to go lower. Rubber closed on May 10th around 1s. 11d. for Standard No. 1 crêpe, and about a halfpenny less for smoked ribbed sheet, against 2s. 5d. for fine hard, 2s. 1½d. for soft fine, and 1s. 6½d. for caucho ball. Balata was quiet at 4s. 1d. to 4s. 2d. for West Indian, 3s. 4¾d. to 3s. 5d. for Venezuelan, and 2s. 6d. to 2s. 8d. for Panama block. Linseed oil is scarce and considerably dearer. Cotton and coconut oil remain unmoved, being still under control.

The following is a comparison of the principal points in the returns of the Bank of England on May 17th, compared with the corresponding week last year:—

May 17th	1919	1918
Bank Bullion ...	£85,573,632	£61,708,187
Reserve of Notes ...	25,976,155	29,597,785
Private Securities ...	77,984,317	105,522,431
Notes in Circulation ...	76,487,085	49,976,550
Rate of Discount ...	5 per cent.	5 per cent.
Price of $2\frac{1}{2}$ % Consols...	54	56 $\frac{1}{2}$
Price of Bar Silver ...	56 $\frac{1}{2}$ d.	48 $\frac{1}{2}$ d.

The London Cocoa Market.

By THE EDITOR.

A PREFERENTIAL DUTY OF 7s. PER CWT. FOR BRITISH COLONIAL COCOA.

ONE of the two chief items of interest for the month has been the complete de-control of raw cocoa on May 5th, the only exception being that all exports have still to be made under license, and quite properly so, and not more than 50 per cent. of the total imports are to leave the country. This latter is, of course, well above the proportion of re-exports in normal times and, if there was any chance of more than one half of our imports being sent away, the regulation would certainly be welcomed. A little modification, so far as we understand D.O.R.A.'s. wishes at the moment, could be introduced with advantage, viz., at present we believe if an importer received fifty bags of Ceylon, or forty bags of Samoa, he must keep back twenty-five bags of the first, or twenty bags of the second, even if ninety per cent. of all imports had been retained on this side. The general idea is that no harm, and much good at times would be forthcoming if entire parcels could be shipped so long as the agreed quantity, fifty per cent. of all imports, do not leave the country. As licenses still have to be obtained, shipments can be checked monthly or weekly as desired, when necessary; otherwise, we feel sure that shipments could be allowed to leave the country quite freely without any fear of the fifty per cent. limit even being approached during the course of a year or six months. If the opposite should appear to be likely, then hold up shipments for a time, but do not spoil nice little parcels just to please red-tape, and so cause unnecessary vexation and limitation of trade and profits just when we want all the money we can catch hold of.

This is one little item in the announcements made which rather amuses me. All along I have claimed that the price fixed for cocoa powder was too high as compared with the low rates at which the beans themselves had to be sold at, especially Accras. Now the Chairman of the Grading Committee, Cocoa Section, tells us, "I am to add that for the time being the export of raw cocoa will be restricted (to 50 per cent. of the total imports), and that the Cocoa Powder (No. 2) Order, 1918, will remain in force as heretofore," and so, whilst imported cocoa powder was sold at the end of April at 1s. 5d. or 1s. 6d. per lb., duty paid, the public who are paying such heavy taxes under the new Budget are still mulcted to the tune of 4s. per lb. for chocolate no matter how low the quality, or 2s. 8d. and 3s. 4d. per lb. for powder. What profits some one pulls out of it; also what a poor encouragement for the consumption to expand! The late Sir Henry Blake, as Chairman of the Rubber

Congress, told us what to expect when rubber came to 2s. 6d. and 2s. per lb. for the raw material, but what could be done with rubber at present prices could be no more wonderful than what would have been done, and can now be done with cocoa and chocolate from the public's point of view had the price been a fair one, and low-class stuff prohibited.

Meat is still over-dear, and bacon all fat and very costly, whilst eggs and chicken are not for the middle-classes at present prices. All those who have under £300 or £400 a year income to-day (i.e., the equivalent of not quite half those amounts before the war) would have all along been only too glad to purchase and consume a good class of chocolate to eke out the supplies, or rather the non-supplies of these other foods at the prohibitive rates that still exist and seem likely to do so, if they do not go still higher. I would add that the official statements do not tally with actual facts in suburbia's household arrangements. There are many spokes stuck in the wheel of satisfaction, after the cart starts from the Ministry of Food, before the food is actually consumed by the public. At no time has it ever been more necessary for the public to hold an iron grip on their expenditure as now. Since this is so, and since it cannot be helped, why not give the public a chance of securing good, plain chocolate and chocolates at really popular prices. Doing so will benefit the producers who have done much to help us win the war, and also the consumers. It would divert much of the demand for solid foods from meat, milk, &c. We have said this before, many times; we shall say it again, many times, before any change is made.

Coming to the question of a Preferential Duty on British Colonial Cocoa, this, on Mr. Austen Chamberlain's (the Chancellor of the Exchequer) proposal of one-sixth the pre-Budget duty, works out at 7s. per cwt., the full duty being 4 $\frac{1}{2}$ d. per lb. or 42s. per cwt. It is certain that this will be agreed to, and so it only remains for producers and shippers abroad to take note what difference this seven shillings will make in diverting fine Trinidads and other grades and growths, that went to New York or to France, and send them here. Until the Budget was known and de-control came into force (much about the same time, May 5th), the volume of business done was quite small compared with what has taken place since. For the moment, we will leave prices alone and turn to movements.

The Board of Trade figures to the end of April show us to have had 50,950 tons of raw cocoa on hand in the United Kingdom against 46,250 tons on March 31st. Work this out at fifteen bags to the ton, and we arrive at a total of 764,250 bags, of which 118,860 bags were in London on April 26th, and the balance must be mainly at Liverpool, at least, so I imagine. Hull we hear has a good quantity put down there from West Africa, but it can be nothing really compared with what Liverpool has, especially if you include the cocoa dumped down and not yet cleared, or even still on board and waiting to come in and be landed. We shall, therefore, have no dearth of supplies for some time to come. Meanwhile here are the Board of Trade returns:—

Rio Cocoa Movements in the U.K.—

	Landed, Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, April 30th. Tons.
Jan., Apl., 1917—	38,628	19,909	3,795	53,900
„ 1918—	9,111	22,629	551	30,100
„ 1919—	50,126	22,166	487	50,950
	Incr. 41,015	Decr. 463	Decr. 64	Incr. 20,850

Of the landings, nearly 40,000 tons, or 80 per cent. of the whole, were West African kinds.

Returns of stock on the dates given below work out as follows:—

Lisbon Movements, April 30th—

	Bags.
Stock on March 31st	39,842
Landed in April	25,331
Makes	65,173
Less delivered in April	10,584
Leaves a stock on April 30th, 1919	54,589
Against „ „ 1918	117,724

London Stock, May 17th—

	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads	16,015	13,341	27,733	22,222
Grenadas	7,743	25,187	22,891	13,112
Other W.I.	3,468	8,114	27,766	6,651
British W. African	40,440	49,510	44,651	34,566
Portuguese African	4,609	4,214	20,997	29,832
Cameroons	476	4,672	13,245	5,678
Ceylon and Java	11,113	22,185	32,617	30,612
Guayaquils	23,387	42,582	63,704	21,089
Bahia and Brazil	986	4,659	11,257	11,562
Others	2,905	3,537	8,292	5,821
Totals	111,142	178,001	273,153	181,145

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Havre Stock, April 30th—				
Pará	1,551	140 to 145	1,584	130 to 134
Bahia	42,155	132 „ 143	13,109	127 „ 135
Venezuela	2,482	148 „ 180	10,426	127 „ 175
Trinidad	15,673	145 „ 152	19,979	127 „ 135
Grenada and O.W.I.	2,412	140 „ 150	13	122 „ 126
San Thomé	4	135 „ 142	795	123 „ 126
San Domingo	—	128 „ 138	1,359	120 „ 125
Haiti	3,886	117 „ 145	2,956	116 „ 122
Accra	1	115 „ 125	6,084	116 „ 120
Guayaquils	2,048	138 „ 148	12,783	134 „ 141
Other Foreign	1,455	—	4,501	—
Totals	71,667 bags		73,589 bags	

At the end of March, it will be remembered, there were only 31,702 bags in Havre. During April, 63,014 bags were received (51,822 Bahias, 5,353 Trinidads and 2,781 Haiti), and 23,053 delivered including 14,231 Bahias and 7,000 bags Trinidads.

Leaflet No.15, issued by the Agricultural Department of St. Lucia, West Indies, is worth securing. Dated November, 1918, and compiled by Mr. Archibald Brooks, the head of the Department (see "Our Friend" for June, 1916), the leaflet is entitled "Cacao Cultivation—Notes on the General Improvement of Cacao Plantations in St. Lucia," and contains so much useful information in its seventeen pages, that one of the leading planters in Grenada, resident over here, expressed great pleasure at receiving the duplicate copy we sent him. He said there was much to learn from it.

The average yield of cacao per acre in St. Lucia is, we are told, about 300 lbs. per acre. This, it will be found, is the general average throughout the West Indies, we feel sure; but, says Leaflet No. 15, crops of 1,000 lbs. per acre could be obtained with care. This is confirmed by a statement that the yield in one

place was increased from 467 lbs. an acre to 1,412 lbs. (cured cacao), thanks to the improved methods of cultivation adopted.

When chocolate of quality is retailed to consumers at 2s. per lb., as it could be, then the West Indies can safely increase their yields to 1,000 lbs. of cured beans per acre, and Bahia put out its full possible crop of 1,200,000 bags instead of 700-800,000 bags at present, whilst the Gold Coast can ship all its 120,000 tons at a profit. When such increases can be consumed, think what much larger revenues will accrue to the cocoa-colonies, and to the Chancellor of the Exchequer over here. Meanwhile the makers by selling twice the present output will probably, taking them as a whole, make far more money than they do now. This is why we object to artificially high prices to consumers and unfairly low ones to producers. Mr. Brook's leaflet should cheer local revenue-raisers and our Exchequer officials as much as anyone.

The last batch of figures in from Bahia shows that centre to have had a very small February as regards exports, viz.: 17,610 bags, against 54,126 last year, and 117,516 bags in 1917. This makes the comparative totals for the ten months, May-February, work out at 598,451 bags, against 666,413 last year, and 634,370 bags for the 1916-1917 crop. The receipts into Bahia during February, 55,348 bags, makes the total arrivals since May mount up to 739,482 bags, or nearly 150,000 bags above the exports. This, added to the equivalent of the stock on April 30th last year, would, if we knew what that stock amounted to, give us the present stock in Bahia City, irrespective of any accumulations at Ilheus or Rio, from which shipments have still to be made.

I noticed that in their issue of May 1st the *Confectionery Journal* of London called attention to the help that would accrue to the German beet-sugar industry as against British producers, if the proposal that Germany should deliver 450,000 tons of sugar a year to France as part of her indemnity were adopted. "Why cannot France make this sugar that she needs?" asks our contemporary. "Is it not because Germany has stolen the machinery from France, and so as a reward she is to send sugar to the country which she victimized? Why not send back the machinery to where it came from, with as much of the latest German machinery as will be necessary to put the French sugar industry on its pre-war basis? Why reward the worst outlaw that the world ever knew at the continued expense of the country, happily victorious, that she tried to crush to the earth? All this is logical; for, in keeping back France's sugar industry, we are discouraging progress in her important confectionery and chocolate-making industry, and so spoiling the demand for raw cocoa from the oldest and best customers in the world for that article." "Watch the markets for twelve months," concludes the *C.J.*, "and see if we are not right. Of course, Germany now is a democracy, and the war was fought to make the world safe for democracy—the German democracy." However much Europe has suffered, Germany is to have a good time at any rate. There is far too much talk about what ought to be done to punish Germany, especially from the leading non-

Europeans at the Peace Conference, to make us have any confidence that Germany ever will be punished either as a nation or in the person of the ex-Kaiser, ex-Crown Prince, or the others who made the war.

This same paper tells us that the Germans have a good deal of money invested in Ecuador, and that it is rumoured that the United States are taking over these interests towards the payment of a war indemnity, but how much reliance can be put in the report it is difficult to say.

Public sales, the first since March last year, were held on May 13th, when some 6,500 bags of all growths were offered, including nearly 5,000 Cameroons lying up at Liverpool. So far as I can ascertain, values were based on actual sales of Trinidads up to 114s. and 115s., with the present duty of 42s. per cwt. (the new duties do not come into force until September 1st, except for tea, which starts June 1st), against 110s. as the top valuation for Grenadas, St. Lucia, Jamaicas, &c., and 80s. for Accra kinds. Guayaquils are also valued at 110s., having been sold at that figure. Prices realized are given in the concluding paragraph, but since then values have advanced until fine Grenadas have been sold throughout at 120s. and one lot up to 121s. Trinidads, on the other hand, are much the same and below Grenadas. West Africans went as high as 85s., and San Thomés have been sold at 112s.

Those interested in Trinidads are wondering how things will go with this growth. France was so hungry for them that she ran the local price up to \$22, but it was last heard of, by letter dated March 31st, as being down to \$17. On the other hand, America should be a big buyer, as she has not received 10,000 bags since October 1st, and the preference to be given over here may, and should, compete with both American and French buyers, and so benefit local rates not only in Trinidad, but in all the West Indian islands. Here are the Trinidad exports to show how the crop was divided up to the end of the half year, March 31st, of the present crop. It is of interest to note how the largest portion went to France this year and the smallest to America, whilst with the last crop it was the other way round.

Trinidad Exports.—October 1—March 31

	To England	To France	To America	Total
	Bags	Bags	Bags	Bags
1918-1919	17,905	86,626	9,903	114,434
1917-1918	12,856	2,100	110,261	125,217
1916-1917	21,318	55,392	105,585	182,295
1915-1916	23,171	26,905	99,076	149,152

Tall prices were realized at the public sales held on May 13th, the first that have taken place since March, 1917, and they showed a difference of about 5s. cwt. for Cameroon cocoa eligible for export and that which must go into consumption in the United Kingdom. Of the 4,800 Cameroons offered, I believe all has been sold up to 109s. to 109s. 6d. for export and 104s. 6d. for home consumption. Ceylons did equally well, say, 122s. 6d. to 128s. 6d. for export for superior, and 111s. to 117s. 6d. for home consumption. Uganda for home use fetched 94s. 6d. and Accra to export up to 83s. Fine Trinidads did not show more than 6d. or 1s. difference for export orders, some 320 bags selling at 117s. to 118s. for both home use and export.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 6.]

JUNE, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:
"CINERARY, LONDON."

Telephone:
LONDON WALL 3151.

"Who will Oblige?"

WE have, unfortunately, completely run out of copies for February, 1918, and January, 1919. If any of our readers or advertisers, who have a perfect copy of either or both of these numbers in their possession which they can dispense with, will be good enough to post same to us, we shall be very much obliged.

"The Production and Refining of Edible Oils."

By B. P. FLOCKTON, M.I.Mech.E.

WE hope to have ready in time for inclusion as a Supplement in our July issue an important article by Mr. Flockton on the above subject. This will contain over a dozen blocks and plans and run into eight pages. As it will be an important and up-to-date statement on the subject, which it deals with very fully, many of our readers will probably wish to have more than their one copy. In such cases, however, they must send their orders and remittance (1s. per copy, post free) by return post as the number of surplus copies will be limited. As is shown by the paragraph immediately above this, we have, in spite of all the care taken to do otherwise, a troublesome habit of completely running out of copies.

CONTENTS.

	PAGE
The Future of British-Colonial Sugar	81
The Fermentation of Cacao.—By Mr. A. W. Knapp ...	83
From Afric's Sunny Clime—Sisal in North Africa; Pig-raising in Servia	85
Baling Presses for ex-German East Africa and Brazil ...	85
Sisal for Selling.—No. IX.—Notes from Madagascar...	86
Explosives for Agriculture... ..	87
"Tropical Life" Friend.—No. 168	88
The Future of Brazil.—President Pessoa in London ...	89
The Woman in the Case.—Frau Ebert and Germany... ..	90
Canada's War Trade—and After.—By the Editor of "Canada"	91
Trade, Politics and Finance	92
The London Cocoa Market... ..	93

The Future of British-Colonial Sugar.

THE PART PLAYED BY "THE HIGH PRICE OF SUGAR."

THE *West India Committee Circular*, after fighting for years for a preferential tariff on British-grown sugar, seems to us to write in a somewhat depressing manner on the subject now they have got what they asked for. One wonders why? The journal never seemed particularly pleased at our timely little book on "The High Price of Sugar," yet we published it to bring about the very thing that the *W.I.C.C.* and the Committee itself have always been fighting for. We would further claim that, appearing when it did, and going to every class of reader, from the Prime Minister downward, whom we know had copies because they wrote for them, this brochure went a good way to help stimulate genuine interest in the production of sugar within the Empire and to call attention to the great value of sugar as a food. If there is any reason to be pessimistic over the situation now that we have got the preference we asked for, it is because there

is some doubt whether the English producers can turn out sugar on a parity with Java or Cuba, to say nothing of Hawaii. All this was carefully considered in our brochure. As we stand to-day at the parting of the ways, we are reminded of two or three remarks in the *International Confectioner* of New York on the subject. In their issue for January its London correspondent told us: "So far as the use of beet-sugar in the United Kingdom is concerned, the question of cheapness—due largely to the close proximity of the Central Powers to the English market—will no doubt influence some buyers who will still only think of cheapness first, and who would on that account buy from—let us say the Crown Prince himself—if they could save even threepence per cent. by doing so At the moment the British Government, and that means the British public, is more likely and ready to offer a preference to British colonial-grown sugar in the hopes of making the Empire independent of outside centres for its sugar supplies than the producing centres throughout the Empire show signs of being able to earn it. Many centres are willing to try, but without India the rest of the Empire cannot render us independent of outside supplies for many generations to come—if ever."

The same correspondent in the *I.C.* for April confirms and emphasizes his former article, and quotes figures to support the confirmation, concluding with this paragraph: "IF (in capital letters) England ever means to develop her own sugar-producing industry by means of preferential duties or otherwise, now is the time to start. She will never have such an opportunity again I am sure."

Can anyone deny that the New York paper or its London correspondent is wrong? We may be more hopeful or firmer believers in the Britisher to "buck-up" or "wire-in" than the *W.I.C.C.* is, or as (we are about to show) the *Madras Mail* seems to be. But what is the harm of that? The world is exhausted and wants a stimulant to encourage it to move. Our optimism is the stimulant. The pity is that if India does not rise to the occasion, all seem to agree that we shall not be able to throw off the obligation of taking German sugar to feed one or other portions of the Empire, even if Cuba does produce over 4,000,000 tons a year. This being so, let us blazon forth the fact all we can. You never know your luck, especially if your figures can stand investigation, and there is no doubt the sugar we need can be produced if given the money, labour and organization to produce it. Land we have got, labour we have got in India, and we ought, with tact on both sides and organization, to soften the lot of the industry outside India. This only leaves the money to be raised. If we can raise money for gold mines without gold, and rubber estates without rubber, as we have done in the past, he who can make us believe that we cannot still hope to raise money to produce sugar, when we *all* know the sugar can be produced, has yet to make our acquaintance. But we must go the right way to work to do so.

The *Madras Mail*, writing on "The Sugar Industry in India," told its readers as recently as March 27th last that "Some time ago we reviewed a very interesting book in these columns entitled 'The High Price

of Sugar and How to Reduce it,' by Mr. H. Hamel Smith, the Editor of *Tropical Life*, which had for its object the demonstration of the fact that, if certain conditions were observed, the British Empire would again secure a dominating position in the sugar markets of the world, which in pre-war days was rapidly passing into the hands of Germany with their bounty-fed beet-sugar. In this work India was to take a great part if she would only abandon her inefficient methods of cultivation and manufacture and go in for improved varieties of cane, intensive cultivation and central sugar factories situated in the producing areas Mr. C. A. Barber, the Government sugar-cane expert in Southern India, in some notes read at a meeting of the Board of Agriculture at Poona in 1917 (reprinted in a *Bulletin* to hand issued by the Agricultural Research Institute at Pusa on 'The Progress of the Sugar-cane Industry in India during the year 1916 and 1917'), touched upon the possibility of India producing her own sugar and becoming an export country, and there is a good deal of internal evidence to show that it was, if not exactly a counterblast to the roseate views taken in Mr. Hamel Smith's book, at least a more cautious examination of the situation."

When one wishes to get attention or money out of the British public it is unwise, in our opinion, not to lay the whole case before them. If the report that secret diplomacy is as dead as the Monarchy in Russia has any truth in it, the public are not likely to object to having all the cards regarding the production of sugar within the Empire laid on the table. Doing so will at least show what our ultimate aim is. What capital will be needed even to make a fair start, and why it is worth straining oneself to get a start made. If, therefore, the goal to be reached is not made a little rosy, how can the slow-moving, sensitive public be expected to "stump up"? Roseate our views may be, but they are entirely truthful. What we ask for can be done if all will help. We do not say we shall get all the sugar we ask for in "The High Price of Sugar," but do say, and we repeat the statement, that if we do not get at least a goodly share of the returns asked for, then this country ought to be ashamed of itself. Democracy may have many good points; it also has some bad ones. Judging from what we have seen and felt as going on around us, in municipal management, in value given for money paid out in rates and taxes, increased fares, needlessly high food costs, &c., and especially in the lack of interest in anything that does not benefit itself, we certainly shall not look to Democracy, as we understand it to-day, for any gratitude, signs of appreciation, nor any money on a big scale for those willing to risk their health and lives to develop the resources of the Empire overseas, whether in connection with the production of sugar or anything else. This is a state of affairs that must be altered, it could be if we play upon the feelings of the Democrat. Remember the wife's saying, that "the way to appease the brute is to feed him." *Vice versa*, if Democracy goes short, or believes he is likely to do so, he will soon find the money—from somewhere.

Perhaps knowing this is why the *Madras Mail* tells

us that our views are too roseate, i.e., that we expect too much of the British working classes as represented by Mr. Smillie and his friends. The *W.I.C.C.* tells us it is with Cuba now that the British producer will have to reckon. Having got rid of the beet bogey of Central Europe, now we are confronted with a cane-sugar bogey made in Cuba. Evidently we are doomed to have a bogey of some sort as an excuse for the slow progress we have made in producing our own sugar, but we would ask, if Cuba can turn the million ton production of pre-war (Hispano-American) days into three to four million tons now, cannot we turn India's two million and more tons (it was over three million tons last year) into four millions also? We have seen Dr. Barber's notes, and the more we read of what India has done, the more confidence we feel in what she could do if given a chance similar to that given to Cuba. Will the Empire give India that chance?

In any case, it is now or never. As the *International Confectioner* says, "Now is the time to start; we shall never have such an opportunity again if we let the present one pass us by."

The Fermentation of Cacao.

THE APPLICATION OF SCIENCE TO CACAO PRODUCTION.*

By MR. A. W. KNAPP.

THERE is a great field for the application of physical and chemical knowledge to the production of the raw materials of the tropics. In one or two instances notable advances have been made, thus the direct production of a white sugar (as now practised at Java) at the tropical factory will have far-reaching effects, but with many tropical products the methods practised are as ancient as they are haphazard. Like all methods founded on long experience they suit the environment and the temperament of the people who use them, so that the work of the scientist in introducing improvements requires intimate knowledge of the conditions if his suggestions are to be adopted. The various Departments of Agriculture are doing splendid pioneer work, but the full harvest of their sowing will not be reaped until the number of tropically educated agriculturists has been increased by the founding of three or four agricultural colleges and research laboratories in equatorial regions.

(a) *World Production*.—To illustrate the above generalization I propose to take the production of cacao (the seed or bean from which cocoa is prepared). At the present time the average yield per tree is surprisingly small, being about $1\frac{1}{2}$ to 2 lb. a year, and the total world production is about 290,000 tons a year. By scientific agriculture, taking a conservative estimate, the average yield per tree could be raised to 6 lb. and the total production to over a million tons a year. The truth of this statement is acknowledged on all sides and raises the ever-present query, "Even if only a yield of 3 lbs. per acre were forthcoming what can be done with the cacao?"

Bahia, the Accra area, and San Thomé are already troubled about securing regular buyers for their increased outputs directly the war-boom is over.

(b) *Harvesting the Crop*.—The cacao tree is about the size of an apple tree, and the pods grow on its trunk and stems. The tree will not bear climbing, and the pods are cut from the tree by knives on the ends of poles; a difficult operation. Considerable ingenuity has been exercised to produce a gatherer which will sever the pod-stems and yet be "fool-proof," but the ideal method of collecting has yet to be found.

(c) *Extracting the Beans*.—The pods have to be cut and the juicy beans removed. This is generally done with a cutlass. What is needed is a knife which will cut the husk of the pod without injuring the beans within. The placenta (the part of a plant to which the seeds are attached) contains a fair percentage of pectin, of which no use is made.

(d) *Conveying Cacao to the Fermentation House*.—Mechanical transport is very rare indeed, only in one or two places is use made of trucks running on Decauville rails. It is, however, in use in San Thomé, where a single estate will produce 2,000 tons a year.*

(e) *Fermenting*.—The seeds or beans are covered with a juicy pulp, and would rot if they were not dried. The best way to remove the pulp is to allow it to ferment; this occurs naturally on exposure to air, as with grape-juice. The effects of fermentation are various and, with good fortune, all advantageous—the bean becomes more easy to dry, and on drying becomes crisp; it develops a richer colour, and on roasting, a finer aroma and flavour. Fermented cacao always fetches a higher price than unfermented cacao from the same place, but fermentation is by no means universally practised. Hence one finds on the market considerable quantities of cacao which contain mouldy beans, for unfermented cacao readily goes mouldy; this is a serious loss to the world. Fermentation is not carried on anywhere in a scientific manner, everywhere the cacao is at the mercy of the chance organisms in the air. The quality of the cacao produced varies, and the quality is reflected in the prices

* It will be remembered that, besides our book on "The Fermentation of Cacao," 11s. 6d. post free, we have published several articles by Mr. Knapp (the leader of thought in this matter) by Mr. Malins Smith, of Grenada, and others. Those interested in the matter should therefore refer to the following back numbers of *TROPICAL LIFE*: In 1914, March (p. 42), April (p. 62), May (p. 83), July (p. 122), and October (p. 217) for a series of articles by Mr. Knapp on the subject. In the same year we called attention to the discussion on Cacao Fermentation at the International Congress of Agronomists at the Imperial Institute, when Mons. Perrot took part (see October, p. 139, and October, p. 186), and also published some notes by Mr. Malins Smith in August, p. 142. In 1915 we commented on Mr. Van Hall's views on the subject in his book "Cacao" (February issue, p. 23), and in December of that year published some notes (p. 227) by Mr. Knapp on Mons. Perrot's "Suggested Improvements in the Preparation of Cacao Beans." In July, 1917 (p. 102), we discussed "Enzymes and Tobacco," and in April, 1918, we published an important original article by Mr. Harvey C. Brill, Chief of Division of Organic Chemistry, Bureau of Science, Philippine Isles, on "The Enzymes of Some Tropical Plants." Mr. Brill, in March, 1915, published in the *Philippine Journal of Science* a very interesting paper on our book and other studies regarding cacao fermentation entitled "The Enzymes of Cacao," and in the same publication in January, 1917, another one covering all the old ground and much that was then new under the heading of "The Fermentation of Philippine Cacao." The last article we hope to be able to reprint in *TROPICAL LIFE*.

* Reprinted by the courtesy of Mr. E. H. Tripp, editor of the *Journal of the Society of Chemical Industry*, from the issue of December 31st, 1918, vol. xxxvii, pp. 468-470R.

obtained; thus the Food Controller has fixed the price of British West African cacao at 65s. per cwt., Grenada at 85s. per cwt., and Ceylon at 100s. per cwt. The quality of any cacao is the result of the botanic variety or "breed," plus the treatment it receives in preparation for the market. Now Grenada and Ceylon cacaos are obviously different in "breed," so that Grenada cannot hope by fermentation, however scientific, to get the Ceylon bean. The line of improvement for Grenada is to try the planting and rearing of the more delicate Ceylon type of cacao. With the cacao from Grenada and British West Africa the case is otherwise. The British West African bean is of a very similar type to that grown in Grenada, and is slightly superior because it is larger and contains less shell (about 12 per cent. as against 15 per cent.). Grenada beans are very carefully prepared (if not scientifically yet with great art) and give practically 100 per cent. perfect beans. This is the explanation of the higher price given for Grenada cacao, although at the present time this difference is magnified by exceptional conditions.

No entirely satisfactory theory of the changes in cacao due to fermentation has yet been established. It is known that the sugary pulp outside the beans ferments in a similar way to other fruit pulp, save that for yeast fermentation the temperature rises unusually high (in three days to 47° C.); and also that there are parallel and more important changes in the interior of the bean. Fickendey, Loew, Nicholls, Preyer, Schulte im Hofe, and Sack have made useful contributions to the subject (see our book "The Fermentation of Cacao" already mentioned), and recently Brill (see *TROPICAL LIFE*, April, 1918, p.54) has determined the actual ferments present. He finds casease, protease, oxidase, raffinase, invertase, diastase and an emulsion. But there is still a vast amount of work to be done before the chemist will be in a position to obtain the more desirable aromas and flavours. Having found the necessary conditions, scientifically trained overseers will be required to carry them out, and for this they will need to have under their directions arrangements for fermentation designed on correct principles and allowing some degree of control. Possibly also enterprising firms will build competing types of plant, in portable sections, easily erected. In these, mechanical mixing will replace the present laborious method of turning the beans by hand. They will doubtless be fitted with suitable devices for catching the liquid which flows away from the bean during fermentation. In choosing a suitable material the makers will have to remember that the beans and pulp contain tannic and acetic acids. As the present overseers generally have no knowledge of chemistry, they do not understand how the appearance of the cacao may be spoiled by the iron nails used in constructing the fermentation boxes. One sometimes sees corrugated iron roofing corroded by acetic acid vapour, or a cement floor eaten into by the acid juice. This leads to the question of the use of the juice which runs away from the beans during conveyance and during fermentation. At present all this runs to waste, and it cannot be less than eight million gallons a year. This juice or "sweatings" contains about 15 per cent. of solids, about half of

which consists of sugars. If the fermentation of the cacao were centralized in the various districts, and conducted on a large scale under a chemist's control, the sugars could be obtained, or an alcoholic liquid or a vinegar could easily be prepared. This acid liquid might also be used for the coagulation of rubber latex. Sir George Watt, in 1913, patented a portable machine for extracting the beans. It cuts off the base of the pod, squeezes out the beans, and includes an arrangement for collecting and preserving the juice which is produced by this operation. This machine has apparently never been used. Machines which are used for drying the beans have, however, met with a better fate.

(f) *Drying*.—This is the only point in cacao production which has received much attention from the engineer. Whether the cacao has been fermented or not, it has to be dried to prevent it going mouldy. The common practice is to spread it on platforms or mats and dry in the sun. In a few places, where sun-drying is difficult, drying machines are slowly coming into vogue. Many engineering firms make drying plant of one sort or another, drying by hot air, *in vacuo*, &c., and doubtless the general principles of drying are well understood, but to make a really satisfactory drying machine one must have knowledge of the chemical and physical nature of the raw product. Too often the makers conclude that a machine which will dry one product is suitable for all others. The great opportunities of the future should encourage further research, for now that transport is so costly the value of drying *all* tropical products is enhanced. In the drying of cacao, apart from loss of acetic acid, more than mere loss of moisture occurs. It has been pointed out by several observers, notably by Schulte im Hofe (see "The Fermentation of Cacao") that during sun-drying the changes due to fermentation continue, particularly the change due to an oxidase, i.e., the oxidation of a tannin, which results in the removal of the astringent taste and the development of a brown colour. With drying machines the conditions are often unfavourable to this action. This is one of the reasons why at present manufacturers of cocoa slightly prefer sun-dried cacao.

Criticism could be made of the various subsidiary processes (washing, claying, polishing, &c.) to which the beans are subjected in different countries, but sufficient has been said to give an idea of the wide field for research and of the opportunities for the application of known facts.

THE Confectioners' and Grocers' Exhibition will be held in September at the Royal Agricultural Hall, where the Rubber Exhibition was housed until it moved to Olympia. Much as the rubber industry benefited by these exhibitions, the Congresses held at the same time were quite as helpful, and in some ways perhaps even more important to the productive, if not to the manufacturing, side of the industry. The same beneficial results would accrue with cacao, coco-nuts, vegetable oils, &c., if a similar congress could be arranged in connection with the Confectioners' and Grocers' Exhibition, if not this year, then at a future date. We are discussing the matter with the managing director.

From Afric's Sunny Clime.

SISAL IN NORTH AFRICA; PIG-RAISING IN SERVIA.

WRITING from Egypt, one of our earliest and keenest critics whenever a question of sisal turns up, acknowledged our February number, which he said "has reached me by launch, and I was much interested in what you have to say about sisal, and to note that your ideas seem to run more on the lines of the Yucatan methods. Under separate cover I send you a sample which I 'retted' only yesterday; this may perhaps interest your London readers.

"If the interest in sisal is still in your midst, I might be of use to your sisal friends in London. The number of men qualified to plant sisal were somewhat scanty before the war, they must be still less to-day. Yet the success of any scheme put forward by Stock Exchange or other syndicates, must depend entirely on their obtaining able and practical men to manage the proposition. All the money in the world cannot command success if the channel through which it passes is not the right one. On this account financiers embarking on a sisal venture run considerable risks if they cannot engage those in whom they have complete confidence, and this especially applies to the expert engaged to draw up the original report. The number of men capable of drawing up a suitable report, and especially who know where to look for suitable areas for sisal, north of the equator in Africa, cannot be very large; and yet too much importance cannot be attached to the experience or type of man chosen to draw up the class of technical report needed in which the facts enumerated must stand out sufficiently clearly to form and warrant the basis of so decisive a step as that of starting to plant sisal on a new area.

"Your claim that 'steamy' areas are suited for sisal does not appeal to me. Because the land does not cost much in the first place, does not prove that it will turn out the cheapest in the end.* Areas are the cheapest in the end which are most suitable in climatic conditions and labour supplies, especially when these are coupled with good and comparatively cheap transport costs. Such places can be obtained in places nearer to Europe than those you mentioned.

"My friend. — knows of several suitable areas within a week or so steam of London, where conditions are said to be almost ideal for sisal and where, with good management, the maximum results can be obtained at the minimum of costs. If — obtains the leave he expects this summer, he might be of use to you, or rather, to the sisal-finance groups in the United Kingdom. So if you still know of such groups I will pass the word on with pleasure if you let me know."

Turning to other matters, here are some tips for "de-mobbed" men with some cash and more energy and the ability of making things go in spite of obstacles.

Energetic and enterprising young men with capital, desirous of an open-air life, should keep an eye on Servia, where pig-raising can be carried on with

advantage. Those who know the country will bear me out when I say that across there herds of pigs are to be seen along the shores of the Danube like herds of sheep elsewhere, and the industry has considerable attractions worthy of attention. Within three days of London, close to Berlin and the French markets, whilst Vienna and Buda-Pesth are near and can be reached by cheap water transports, all go to make the possibilities considerable.

Of course, this would first necessitate a year's residence on a well-managed Servian farm in order to obtain a working knowledge of the language, customs, markets and general conditions, especially local wages, &c., but the Servian Legation in London would, no doubt, be willing to furnish the necessary information for a scheme to draw men and money to develop Servia, and to introduce such men to suitable farmers, and others.

There are those whose constitution and health would not take kindly to the tropics. Others with but limited capital would find, if they got in the right groove, that they could do as well and better in Servia with a smaller capital than is necessary to make a good "stand" in the tropics. Less time and money would be needed to "feel your way," and a suitable class of Englishman would undoubtedly be welcomed. From the social side the climate is good, the "atmosphere" romantically interesting like the people who are kindly and well disposed towards us, whilst you are near home, and nearer still to the pick of the capitals and centres of population in Europe. Piggeries on coco-nut estates, poultry farms under the palms, and stock-raising along the fertile banks of the rivers under the glorious tropical sun may be things to dream about for the short-of-cash ex-soldier, but dreams do not fill the pocket nor the "bread-basket"; pig-raising and allied side-lines in Servia can and will do so if care is taken to start on the right lines by those whose capital do not admit of their going to the tropics and establishing a coco-nut estate on which to rear pigs and poultry between the palms."

Baling Presses for ex-German East Africa and Brazil.

AMONG the first of any machinery to be imported into the Protectorate, reports Mr. Chadwick, of the India Civil Service, in his report on the trade and resources of ex-German East Africa, will continue to be tropical agricultural plant. Machines will be required for decorticating sisal and other fibres, for preparing raw rubber, together with baling presses, cotton gins, rough grinding mills, pumps and a certain number of ploughs, reports the *Indian Trade Journal*. The rate at which the demand for tropical agricultural machinery will increase depends upon the growth of production as a whole, whilst the classes and sizes of the machines required will depend upon which class of cultivation is most developed, cultivation by natives or by white settlers or the further extension of plantations. This will also depend to a great extent upon whether central machinery installations are generally adopted. The British Consul for that centre in 1918

* This is what Prof. Carmody laid such stress on in his paper before the R.C.I., see pp. 73-74 in our May issue.

was of opinion that the cotton growing industry would afford an opening for motor ploughs, of which there were then three in use in the Protectorate with about a dozen steam ploughs as well. The further cultivation of foodstuffs, coco-nuts for copra, ground-nuts, soya-beans means that more implements, mills and drying and cleaning apparatus will be wanted.

The export in the days of the German occupation compared as under:—

	1911	1912	1913	Metric tons
	In marks, 000's omitted			in 1913
Sisal	4,532	7,359	10,711	20,834
Rubber	4,781	8,426	6,660	1,366
Cotton	1,352	2,110	2,620	2,191
Copra	1,845	1,563	2,348	5,477
Groundnuts	—	1,273	1,918	8,960
Coffee	1,266	1,903	931	1,059

In Brazil also there should be a good demand for powerful and thoroughly up-to-date presses, for according to *Wileman's Brazilian Review*, so long as there was time to import and mount up-to-date baling machinery at Santos, the Minister of Agriculture was proposing to mount simple hydraulic presses of local manufacture with a capacity of only 600 kilos per cubic metre, or about the same as in the United States.

With such an installation it is expected that fifty to sixty thousand bales of 200 kilos each may be available for export during the coming crop. Much, however, must depend on the tonnage available, which will continue far below requirements. As we pointed out in the Supplement (p. ix) of our September (1918) issue, when quoting Mr. William C. Redfield, Secretary of Commerce in the United States of America, "High density compression of cotton would not only create imperative war economies in the transportation of the crop, but would likewise increase very materially the earnings of the cars and motive power used."

Brazil should be glad to economize along such lines, both with the cotton she moves outward for export or inland for manufacture. Santos is a busy centre, and cars are not as numerous anywhere as the users would like, and so bulky stuff like cotton, fibre, &c., will need powerful presses during the time to come, in order to economize space and power when moving it about, either on rail or on board ship.

The cotton production in Sao Paulo this year is not expected to exceed 140,000 bales, it may only be 120,000. Where makers of presses will come in on this deal if they go the right way to work, lies in the fact that at the close of the season it is proposed to sell the installation just laid down to users up country, or elsewhere, and instal more permanent, powerful and thoroughly up-to-date machines. Who will bid for the supply of these latter?

"WHEN I was in the Calabar district," writes Mr. W. H. Johnson, Director of Agriculture, in his report on Southern Nigeria for 1917, "I visited the African Association's para rubber plantation at Ikotombo, where excellent progress has been made. It now comprises 500 acres, with 54,000 trees from two to six years of age, about 40,000 of which are large enough to tap."

Sisal for Selling.—No. IX.

(Continued from May issue, p. 68.)

NOTES FROM MADAGASCAR.

As regards a nursery and the preparation of the soil, Mr. A. Hoffmann, the author of an article in the *Revue Tropicale* of Madagascar (No. 19, pp. 219-226, of Tananarive, 1918, and quoting the *Bulletin* of the International Institute of Agriculture at Rome), tells us that when preparing a nursery, if the soil is not rich enough, some manure mixed with wood ashes should be turned under. The earth should be banked up well round each plant, and the soil must be kept free from weeds; when, after twelve or sixteen months, the plants are 14 in. to 16 in. high, they can be transplanted. The methods of preparing the soil and planting must obviously vary according to the district; the soil should be well cleansed and tilled, and if too poor in lime, it should be limed. The distance between the plants varies according to the districts, and is controlled by the desire to plant as many plants as possible per hectare; the author advises 78 in. by 98 in., or 78 in. by 118 in., which gives 1,650 or 2,000 plants per hectare. After transplanting, before or towards the end of the rainy season, the attention required consists in replacing dead plants, cleaning or weeding, removing the suckers that live at the expense of the parent plant. These suckers, dried in the sun, serve, with the bulbils, for reproduction.

The crop is ready to harvest three years after transplanting. Mature leaves can be recognized by their yellowish-green colour and the silver-grey colour of the terminal spine; at the first cut each plant can give twenty-five to thirty-five leaves.

Mr. Hoffmann then outlines a scheme for a plantation, with running expenses for Madagascar, and arrives at a total of 200,000 francs (including the works and not counting administrative expenses) for a 200 hectare plantation in Madagascar. Under these conditions the cost price per hectare ready to be exploited comes up to about 1,000 francs, about £40, or \$200 U.S. currency. If the yield is calculated, it will be seen that the products of the first two years will pay all the costs of the plantation. In countries where labour is still relatively cheap and the value of land moderate (as in Madagascar), a profit of 500 to 600 francs per hectare per year may be counted on.

Mr. Hoffmann also calls attention to the fact that the agave is one of the few plants that suffers little from insects and fungi; even locusts rarely attack it.

Of late years the cultivation of one or other of the *Agaves* has been started, and continuously extended in nearly all tropical and sub-tropical countries. The plant is indigenous to Mexico, South America and the southern part of North America. The first plants were imported into Europe and India about the middle of the sixteenth century, but Europeans only began to take an interest in the crop towards the end of the nineteenth century. Known species include the following:—

Agave americana, the maguey of Mexico, growing wild in temperate zones, with a very fine, white fibre; its sap is used in treating skin diseases. *A. decipiens*,

or false sisal, of no cultural interest. *A. mexicana*, imported into Madagascar, where its growth is not advisable on account of the strong, lateral spines. *A. rivipara*, one of the few varieties suitable, for damp soils, mostly grown in India. *A. Lespinassei*, or "Zapupe" (Vincent), one of the best varieties for yield and hardness. *A. rigida* var. *elongata*, indigenous to Mexico, prefers a warm, dry climate, and very dry, stony, calcareous soils; rarely grows above an altitude of 1,000 ft. One sisal plant yields sixteen to forty leaves a year; the fibre content varies from 3.5 to 4.2 per cent., according to the soil; besides extracting the fibre, attempts have been made to extract alcohol from the pulp (residue of the decorticated leaves).

Although very hardy, agaves have certain requirements; light volcanic soils, dry and rich in lime, suit them best; over-damp or too clayey soils should be avoided. Shade and torrential rains are very harmful. In short, they require a tropical climate, well drained soils, the open air, and a distinctly dry season.

(To be continued.)

THE Hon. Secretary of the British West African Association was the guest of the African Progress Union at their inaugural meeting and dinner some little time back, and an understanding has been arrived at between the Association and the new Union as to methods of co-operation. The committee of the B.W.A.A. has been invited by Mr. Handley Page, we understand, to visit his works and discuss the question of an Air Service to West Africa. Captain H. O. Newland—to whom we beg to offer our congratulations on his promotion—the Hon. Secretary of the B.W.A.A.—has been appointed Officer in Charge of Education, A.R.A.F. South-Eastern Area. When discussing the future of West Africa with him, Captain Newland told us, in December, that his book on "Coco-nuts, Palm-kernels, and Cacao" will be published by Messrs. Griffin very shortly. It ought, therefore, to be due by now, if it has not already made its appearance.

CONSIDERABLE progress has been made in the project of founding a Portuguese Chair of Language and Literature at University of London King's College, and over £8,000 has already been collected. Unfortunately this is not enough for endowing a full professorship, the University insisting on a minimum salary of £600 a year. If another £4,000 or £5,000 cannot be raised it would appear that the Portuguese must be content with a University reader. It would be very unfortunate if the kinsmen of Camoens were to be put on a lower level than those of Cervantes, and it is earnestly hoped that some way will be found for getting over the difficulty. The Cervantes Fund amounted to over £23,000, and there is no doubt that there are more London firms interested in Spanish than in Portuguese. Cannot some help be forthcoming both from the Portuguese and Brazilian Governments and from individuals in both countries? It is interesting to note that, though a professorship has not yet been started, admirable work has already been done in the department. Who will help?

Explosives for Agriculture.

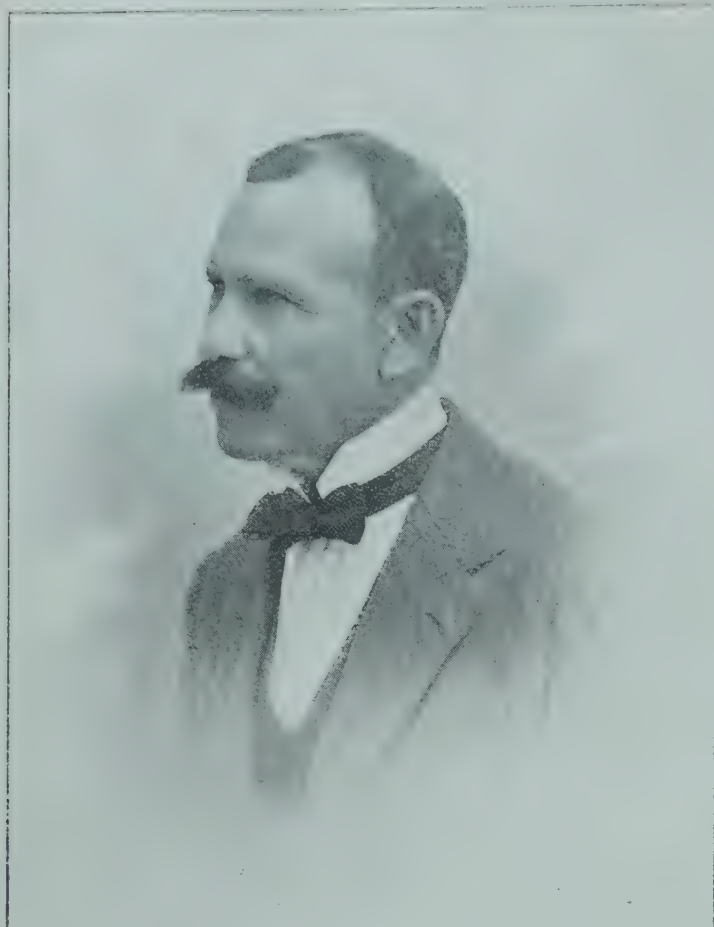
SINCE the days of the New York Exhibition and Congress and the Congress held in Java, to both of which we contributed carefully-thought-out articles on the use and advantages of explosives for breaking up tropical soils, facilitating the cutting of main drains and waterways, and also for planting trees, the idea of using explosives for agricultural purposes in the Tropics has gone very flat, as if the practice had entirely died out. We trust it is not so; but the fact that our friends for whom we "fought the good fight," a fight in which we believe we had far more faith than they did, have lost interest in our work has caused us to have our doubts.

Maybe now the war is over, if we, the pioneers of the movement on paper (for we had even to explain why it would benefit the Tropics to advertise agricultural explosives and drew up the advertisement to call attention to them) get left in the lurch, our contemporaries overseas who have benefited throughout by our propaganda will yet be able to enjoy the results and, what is more important, use our congress papers to drive home the lesson to the planters.

For this reason we were glad to see in our last batch of exchanges that the *Farm Bulletin*, the *Scientific American*, and the *Queensland Agricultural Journal* show that there are still wise men left in the temperate zones to give explosives a trial. Nothing of importance, however, will come from the magnificent possibilities for trade from the Tropics if those having the explosives to sell do not continue a plan of campaign along the lines we mapped out. Even in those days the high cost was against their use. Prices are not lower to-day, so that the "doubting Thomases" hold the floor, and will continue to do so until similar up-to-date articles to ours of 1910-1916 are published.

HAVING had a rather strenuous time, we thought we would look in at the Adelphi to see if Hughie had grown any older, but found "The Boy" the same go-ahead youngster of fourteen, who only becomes his real age at the end of the play. Mr. W. H. Berry as Meebles the Magistrate is as splendid as ever, but this does not detract from the excellent work done by Mr. Roy Royston as The Boy. Folks are inclined to talk of this as a one-man play because Mr. Berry is so good in it. It is, however, nothing of the sort; it is only because the others back up the leading character so well that the play has been the success it has proved. It is running a close second in the public's favour to another musical favourite, "Chu Chin Chow." Both are equally good for different reasons. We certainly congratulate Mr. Alfred Butt on the success of "The Boy," and trust all his family will be as great a credit to him.

THE Liverpool Branch of Messrs. Mann and Cook, whose head office is at 7, St. Michael's Alley, Cornhill, London, E.C.3, writes us that they have purchased the firm of Messrs. Canning and Ashworth of Sierra Leone as from July 1st, 1919. We have received the May issue, No. 159 of *Le Journal d'Agriculture Tropicale*, now at 27, Rue Lafitte, Paris.



"Tropical Life" Friend.—No. 168.

MR. ERNEST D'RADCLYFFE CLARKE,

Cacao and Rubber Planter, Trinidad, B.W.I.

WE have had the pleasure of knowing Mr. Clarke for many years, thirty or more, and never remember having ever seen him altogether unoccupied, mentally and physically, or tired out or even seriously inconvenienced by the tropical heat. Those who imagine that life in the Tropics means a little work in the cool of the morning or of the afternoon, and resting all the rest of the day, will be well advised to steer clear of "Our Friend" for this month. It would, we feel sure, be the education of a lifetime to see such a victim fall into "Our Friend's" net, but the result could only rival that of Padgett, M.P., in Kipling's immortal poem.

Yet no one enjoys better health, and there is no doubt that an active life, whether in the Tropics or temperate zone, harms no one, but then, of course, the word "active" has so many definitions, a different one for each temperament; hence, whilst many will agree with our theory, many might disagree with Mr. Clarke's practice. It was the same when we went hunting together. "You waded the stream, run up the bank, and duck under the bush on the other side, and—well, there you are." So you were, when you got there, but the wonder was that, if your body arrived, it had any clothes left on it. The stream was a river, the bank a small Gibraltar, and the light bush alone proved to be of a thickness that would have prompted Peter the Great to have run a wheelbarrow through and smash it down for opposing his passage, as we are told he did to the beautiful hedge at John Evelyn's house at Sayes Court, Deptford, when he lived there whilst working in the shipyard close by. Yet "Our Friend" used

to disappear into the undergrowth after his quarry as if no "bush" was there; more wonderful still, when we met again his clothes seemed but little the worse for the encounter.

Those interested in the introduction of para rubber into the West Indies, and especially into Trinidad, must remember Mr. Clarke's share in the matter, and the tapping demonstration that took place on one of his estates when the trees had arrived at a tappable age. We well remember the avenue of pineapples along the drive up to his house at Chaguanas, and all the time his cacao lands, the main crop with which he concerned himself, were being carefully tended on up-to-date lines. No one realized better than "Our Friend" the work entailed in running such estates to pay. "I think I am really one of the busiest men in the island" he wrote us last September, when he was much occupied in establishing a Young Man's Club in Port-of-Spain as a little recreation to his more energetic efforts as a planter. We were not particularly idle ourselves at the time, but felt for once rather glad that we were not in Trinidad lest the contagion of "Our Friend's" love of work should spread to us, as it did in the old days when we were younger and could stand the pace even in the Tropics.

Originally in the Government service; during the greater part of the thirty-five years that he was so, Mr. Clarke was connected with the Supreme Court of the island. For one reason or another, but probably because his interest in planting and his affection for the life on an estate got too strong a hold of him, "Our Friend" retired from the Government service in 1911 when Administrator-General and Official Receiver, and since then has rested, satisfied to be the owner of more than one well-managed cocoa estate and an active member of the Agricultural Society, and of the community at large.

Like ourselves, Mr. Clarke is very keen on scientifically training the rising generation to become planters and agriculturists, as he realizes that without such a training success is never certain. To secure the best results, colleges, he will tell you, must be established in the Tropics themselves, and those who want to go East and plant must receive their training in the East, whilst the would-be Westerner must go West to learn. "Those having the means and time to do so, however, will be well advised when we have the colleges," "Our Friend" pointed out, "to attend a course on some subjects at both centres, for you can never learn too much, and although methods out East may not altogether suit us in the West, you can often learn much by realizing what does *not* suit your conditions." As recently as last February a letter appeared from Mr. Clarke in the leading island paper on "Schools of Tropical Agriculture."

We regret that lack of space prevents us from also including a photo of "Our Friend's" house in Port-of-Spain, the chief town of Trinidad, as doing so would not only show the owner and Mrs. Clarke *chez eux*, but would give an illustration of how a tropical town house should be built for comfort and health, including an excellent garden with many rose trees and other attractive flowering plants.

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

JUNE, 1919.

The Future of Brazil.

THE NEW PRESIDENT, MDME. AND MDLLE. PESSOA,
VISIT LONDON.

ALL well-wishers for the prosperity of the future trade relations between Brazil and the British Empire must have cordially welcomed the visit of the new Brazilian President to this country, and read with pleasure the speeches made at the various functions which our distinguished visitor attended. All the speakers seemed to look for a brilliant future for the two countries, both with regard to their economic development as well as the social and intellectual well-being of the two peoples. There can be no misunderstanding about the term "well-being of a people"; the visit of the President of Brazil will go a long way to help the well-being both of his countrymen as well as that of the subjects of King George, and also we would add, thanks to his sojourn in Paris, of our French Allies as well.

Accompanied by Madame and Mademoiselle Pessoa, H.E. President Epitacao Pessoa arrived in London in

time to be present with our King and Queen at Epsom on June 4th and witness the world-famed Derby race being won. Having taken a close interest in the internal development of Brazil during the past fifty years, having even purchased Brazilian securities when everyone blamed us for doing so, we now feel able to remind these well-wishers of our own affairs that we never had any reason to regret our confidence in Brazil when her trial runs were not giving that satisfaction to the general public that they wished, and to express our belief that Brazil will come out first among the countries whose trading possibilities will render them objects of envy to ourselves and other nations which cannot hope to flourish without the help of these big oversea markets. Of all the big markets of the world—import as well as export—under the control of a single authority, whether President or King, we feel sure that Brazil will do her share in striving to outstrip her competitors.

On June 5th, it will also be remembered, the King gave a banquet at Buckingham Palace in honour of the Brazilian President, to whom a large and distinguished company were invited to do honour to the nation's visitor. The President entered the banquet-room with Her Majesty Queen Mary, whilst the King followed, escorting Madame Pessoa. The Prince of Wales was unable to be present owing to a regimental engagement, but Prince Albert, Princess Mary, Prince and Princess Arthur of Connaught and Mdlle Pessoa were also present, forming an assemblage which, for distinction and magnificence in its setting, backed up by the presence of the historic service of gold plate brought specially from Windsor, was fully worthy of the leading representatives of a nation whose forebears played so important a part in making the *civilized* portion of Europe all that it stands for to-day. We say this because one does not have to think two minutes to realize the quality of the European stock that sailed from Europe to discover and develop Brazil and Latin America. The arts of the Greeks, absorbed by the fighting organization and trade development skill of the Romans, were, in their turn, lost in the inroads of the restless, virile race, the best of whom, known as the Visigoths, passed on from Rome into Iberia. Here they remained, retiring for a short period before the Moors into the mountains of the Pyrenees, whence some passed over into the Basque country of modern France, some went along the Atlantic and laid the nucleus of the modern Portuguese people with its purer remains of the language of those days, whilst the bulk came back into the plains and cities of modern Spain, and driving out the militant Moors, took over their beautiful external architecture and love of interior decoration and many Moorish ways and words, and settled down to make Spain what it finally became in the days of Philip the Bigot. Of such antecedents great men can be looked for, but even the greatest of men in these democratic days must work much and talk little. There are some Latin Americans who would be wise to remember this. The heroes of the War of Independence were largely made up of Europeans, but there were many wonderful examples among the rank and file, black as well as white, women as well as men, who for tenacity to their cause, for pluck and ability

to overcome against fearful odds or to die, were second to no one, not even San Martin himself, who, to our mind, really did more than Bolivar to lay the foundations of and to assure victory for the oppressed people he led against Spain. We are on the eve of an epoch, when the descendants of those who San Martin, O'Higgins, and a host of others led to victory will have to render an account to the memory of these dead patriots and heroes and prove themselves worthy of the sacrifices made for them a century and a quarter ago, as we shall also have to do with our fallen patriots in the years to come.

As with the war now ending, the War for Independence in Latin America was really caused by an attempt of those in authority to avoid work themselves by thrusting drudgery on others. There are those of all classes of society in Latin America, as well as elsewhere, who are still troubled with this complaint. We trust that the happy circumstances which found Senhor Epitacao Pessoa in Europe at the time of his election to the Presidency of Brazil will enable him to realize the strenuousness of modern life for those who mean to remain "top dog," and having realized that himself, to pass the lesson on to his fellow-countrymen at home. We fancy both these wishes on our part will be fulfilled, and, in the expectation of their being so, we wish Senhor Pessoa and the people of Brazil the "Best of Luck" during the trying days of reconstruction after the war that lie ahead of us all.

The Woman in the Case.

IS FRAU EBERT THE REAL RULER OF GERMANY?

AFTER all one has heard, for a good many years past, of the rudeness, often apparently deliberate, of the Prussians, if not of all Germans, towards women, it is refreshing to read of at least one German woman, and a very typical one, who apparently enjoys the satisfactory position of at least enjoying the respect of her husband, if she does not actually guide and rule him. We refer to the wife of Fritz Ebert, the chief magistrate of Berlin.

The collection of notes by the various international papers on Frau Luise Ebert, the daughter of a small shopkeeper, who married the harness maker after he had failed as a tailor, makes interesting reading. We are building up our remarks mainly on a (nearly) two-page article ex *Current Opinion* of New York for June. When the wedding actually took place Ebert had also given up the harness shop and attached himself to the socialistic group of Bremen, and was among the leaders of a strike which affected the fortunes of the father of Luise, in the house of which he became something of a hero. It is claimed that Fritz genuinely fell in love with her and has not wavered in his devotion. Having read the various accounts, one feels that it is the woman behind the man who really controls the destiny of Berlin and of Germany, since she undoubtedly controls its chief magistrate.

We say this because not long after her marriage, it is reported by the *Tribuna* of Italy, Frau Ebert

found that the temperament of her husband was hindering his success as a leader of men. His ideas were sound, but the means by which he sought to convey them to others were neither suitable nor appreciated. He was mercurial, verbose, physically strong, though extremely short and fat, and possessed of great initiative, but he could not write letters, keep accounts, or attend to details. His wife, therefore, became his amanuensis, book-keeper (she was an excellent keeper of accounts for her father), and even editor, for his speeches were too often mere incoherent denunciations of everybody and everything; destructive without being constructive. Frau Ebert, we are led to believe, altered all this. If she lacks his enthusiasm, he lacks strength in practical details. He, with his over-romantic imagination, avoids obstacles, leaving them to be surmounted by others, but his wife prefers to remove them *en passant*. She is reserved and cool, whilst he is hot-headed and expansive. Whilst Herr Ebert "lets off much gas," Frau Ebert sews or knits and delivers her views on the various social questions of the day with thought and conviction, but does not lose herself so completely in the subject as to fail to notice when she drops a stitch in her knitting, which is picked up, even if doing so should cause a break in the conversation.

A woman of considerable education, Frau Ebert, we are told, reads French poetry in the original, plays the piano well, and can paint flowers and burn them in on china. On the other hand, it is said that she is able to guide her husband in his dealings with Haase, with Scheidemann, David, Kautsky, and the others by her views on the best methods to employ when handling men of their type. The ability to do this emboldens one, therefore, to wonder whether, after all, it is not *really* Frau and not Herr Ebert who rules Germany. Let us put it this way: Fritz Ebert rules Germany, and Luise, his wife, guides him. She has attained to the position of being able to do so, and to the boundless influence that this position has brought to her, not only by her ability, but as a result of hard work. She has evidently moulded her husband to become the man he is probably without his being aware of the fact. Without letting go her grip on her home and her children, she studied rhetoric and elocution in order to impart their mysteries to him, and reads political economy, and keeps herself well informed regarding events that her husband may pass by, but which her knowledge tells her he should know. Truly, therefore, if there is any truth in these reports, she is a power that we shall have to reckon with both within and without the territory of the Central Powers unless the Ebert "government" collapses.

We agree with the American paper that says that it is within the bounds of possibility that hostility to one individual on the face of the globe may defeat the plan to end war. If this should turn out to be true, then that individual will call down upon his head a well-deserved censure second only to that which hangs over Germany for starting the war. This remark was published in America some time

before the report that the United States Senate hit President Wilson a blow "straight between the eyes," when it passed a resolution ordering the printing of the *full* text of the Peace Treaty in direct opposition to the wishes of their President. We are glad to hear this report, for, so far as one can gather, President Wilson does not enjoy the confidence of the public (so far as his Peace policy is concerned) either in Europe or America. It is as well, therefore, if the Peace to come is to be truly a lasting and a just one to the Allies, that the leading men in America should assert themselves as they appear to be doing. We wish them all success. We have every confidence in America as a nation, and trust that they will not be hoodwinked into believing that the present egg-shell called the German Government has anything inside. It may last out to sign the Peace, and then crumbling away, leave the real German people to laugh at us and to repudiate the treaty, with less injustice than they did their treaty with Belgium. The American papers, at any rate, show no signs of being blind to such possibilities.

Canada's War Trade—and After.

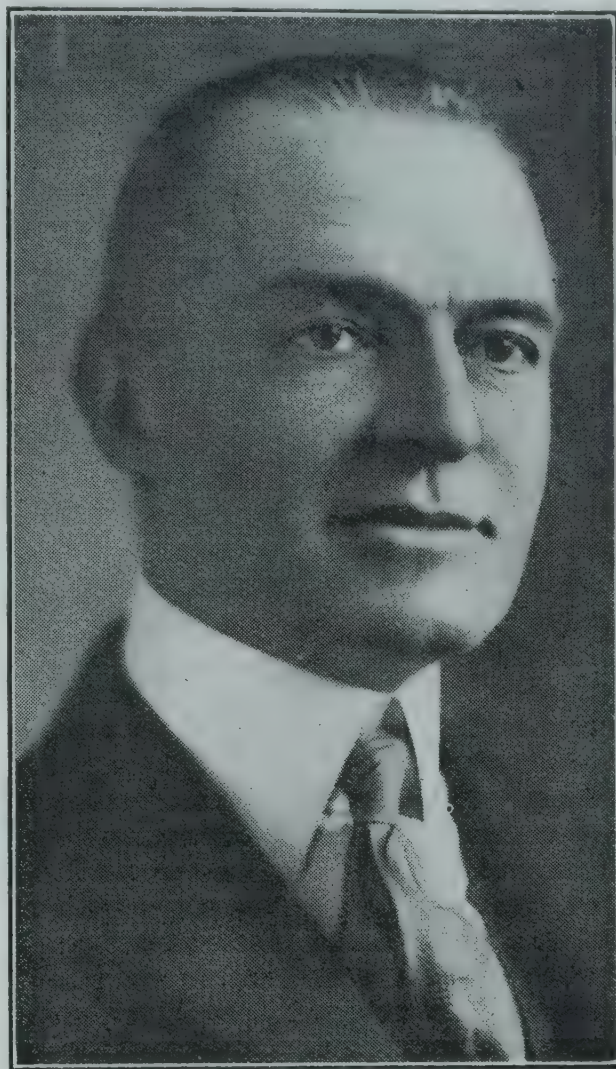
BY THE EDITOR OF "CANADA."

No country has been more richly endowed than Canada with natural resources of field, forest, mine and water. The Dominion, therefore, is well supplied both with the raw material and with the facilities for converting it into the manufactured article. Throughout the war Canada was able to aid the Mother Country and the Allies by sending to Europe not only some 400,000 men, but also food-stuffs, munitions, and other supplies which have very materially assisted in winning the war.

At the outbreak of war the trade and commerce of Canada were in a flourishing condition, and under the guidance of the enterprising Department presided over by Sir George Foster, there was every promise of marked expansion. With the commencement of hostilities, however, a check was experienced. The moment Great Britain was at war, Canada was at war. Overseas commerce was practically cut off, all the available shipping having to be devoted to bringing men and war material across the Atlantic. Many manufacturers of the Dominion, too, found themselves called upon to transform their factories and their business policy, and in this respect they showed an adaptability which was of the greatest service to the Empire, and bids fair to be of the utmost national importance in the years to come. A few facts will enable those in the Mother Country who may not have fully grasped it to realize the extent of Canada's war activities.

Canada's annual net export of wheat and flour for the supply of Great Britain and our European Allies increased over the average annual export before the war by eighty million bushels; of beef, by seventy-five million pounds; of pork and pork products, by one hundred and twenty-five million pounds. Other products sent to Europe included hay, oats, cheese and fish in correspondingly increased quantities.

But it is in regard to munitions that the most striking record is shown. Before August, 1914, no Canadian manufacturer had ever made a shell or a cartridge case or a fuse. But the establishment of the War Purchasing Commission—later the Imperial Munitions Board—brought about a remarkable development. In December, 1914, there were two firms shipping munitions; in January, 1915, eight firms; in April, 1915, fourteen firms; in June, 1915, thirty-six firms, with an average weekly production



of 77,000 shells; in June, 1918, the average weekly production had risen to 386,000. Already in the second half of 1917 Canada was producing 55 per cent. of the shrapnel, 42 per cent. of the 4.5, 27 per cent. of the 6-inch, 15 per cent. of the 8-inch, and 16 per cent. of the 9.2-inch shells used by the British armies. The total number of shells produced was over 60,000,000, representing approximately 670,000,000 component parts, while in addition a great number of separate components were exported, in the production of which steel was used to the amount of 1,800,000 tons, of which about 75 per cent. was produced in Canada. Of high-grade explosives and propellants there were produced 100,000,000 lbs. The value of orders placed by the British Government through the Imperial Munitions Board was £240,000,000. By the end of the war there were about a thousand munitions contractors in Canada, and the workers employed in connection with munitions numbered 350,000.

By the end of the war Canada was also producing shells for the American Ordnance Department in large quantities. In many other directions industries have been set on foot or placed on a firmer basis than ever before. What is still more important, there are at the present moment many evidences of the fact that Canadian manufacturers have learnt from their war experience lessons which will qualify them for meeting the world-wide demands of peace and make Canadian products still better known.

An important factor both in re-establishing former trade connections and opening up new markets is the Canadian Trade Mission, whose headquarters are at 1, Regent Street, London, and whose chairman is Mr. Lloyd Harris, formerly head of the Canadian War Mission in Washington. This body was appointed by the Canadian Government, and is representative of Canadian business interests in general. It is in close touch with manufacturers of all descriptions. Its business is not only to find an outlet in Europe for Canadian manufacturers, but also to find sources of supply for Canada's requirements in raw material.* The value of the work already done by the Mission cannot be over-estimated. In pursuance of this policy the Dominion Government also made arrangements for the representation of Canada at the Lyons Fair in March last.† The presence there of representatives of some fifty Canadian firms, as well as of Government departments and the railways, is likely to have an important bearing upon future trade with France.

The Dominion Department of Labour recently reported, as the result of a comprehensive investigation, that the country is entering upon a period of expansion greater than at any time in its history, and that the manufacturers are only awaiting a sufficient supply of labour to institute large schemes of development. Now that all import restrictions have been removed by the Mother Country, the fulfilment of this prognostication is a foregone conclusion.

The flood of orders received by the steel corporations forced them so to extend their plants as to make large developments possible within the next few years. Government assistance has enabled plate-rolling to be placed upon a basis capable of development for both shipbuilding and railroad construction. In chemistry, special attention is being directed to the development of water power and other natural resources, and with the assistance of the Industrial Research Commission the establishment of numerous new industries is certain in the near future.

Shipbuilding has been established on both Atlantic and Pacific coasts, and several great British firms have opened yards. Whereas four years ago there was in Canada only one well-equipped steel shipbuilding yard, there are to-day thirteen engaged in building steel vessels for the Merchant Marine projected by the Dominion Government—a development of the greatest importance both industrially and commercially, for without ships expansion is impossible for the export trade which Canada is building up.

Canada's great forests are destined to play a large

part in supplying the enormous requirements of Europe within the next few years. Already, through the instrumentality of the Canadian Trade Mission, lumber orders have been placed in the Dominion amounting to over £8,000,000. Similar prospects are before the agricultural implement industry, where farm tractors are being made a speciality. Other lines of Canadian manufacture which are likely to be more heard of in the world's markets than in previous years are cotton, flax, knitted goods, pulp and paper, and fertilizers.

OFFICIAL inquiries in the U.S.A. have produced a statement that 314,936 tractors for haulage, ploughing, &c., were turned out by the various makers during the present calendar year (whatever that means), against only 132,697 machines during the previous campaign. We know of hundreds of agriculturists who should be using these necessary aids, but who have probably never seen one. When, therefore, the United States have any tractors left for export and want to place their machines among tropical and sub-tropical buyers, they should bear us in mind. From our start in 1905 we have steadily advocated increased cultivation on estates and pointed out the advantages of power-driven implements.

Trade, Politics, and Finance.

WHAT is the matter with rubber, why is the share or raw rubber market alike so flat and likely to be so for some time? Why, when everything runs up and up in price and the average man and woman of all countries go about with a stiff upper lip in preparation for an ever fiercer struggle to bring in the weekly and monthly pay, and then to make it "pan out" sufficiently to cover the absolute necessities of the house, is raw rubber alone depressed and neglected? What about the late Mr. Manders' fourteen points or uses for rubber (or was it seventeen?) to be found on every man; why is it that to-day rubber is not wanted as much as ever? Whilst every other product is clamouring for more tonnage, have the gods given raw rubber alone such a plethora of tonnage that the market has been flooded with supplies whilst the demand is still dead? "It is waste of time and paper to write about rubber shares," a leading financial authority tells us; "the market is dead, as is but natural, with rubber at 1s. 10d. per lb." What a boneless statement! The writer must have got a rubber backbone. Of course, if you say rubber is dead, it will die; but it must be far from dead, and the sooner the public are told so the better for everyone, not forgetting the rubber producers themselves. Might be, if these worthies woke up and ran a tactful propaganda in the papers showing that rubber, like everything else, is only preparing for a healthy and well-arranged spring forward, the moment its turn comes to do so, we should hear far less of these depressing reports and find the consumption, and hence the value of the shares and price of the article less inclined to stand still.

* Sellers of cocoa and sugar should note this.

† See TROPICAL LIFE for April, p. 58.

We know margarine has got very "cocky" of late, and imagines, upstart that it is, that the world to-day cannot possibly live without its help. Well, do you blame the greasy compound for having so good an opinion of itself? Why do not the rubber producers follow its example and tell consumers how useful rubber can be to them? Turn out good margarine (or good rubber) and you will do what the Maypole Co., Ltd., has just done, and declare a dividend of 1s. 3d. per two-shilling share. This was in spite of the troublesome year through which they have passed and the increase in the price of their materials. The company also proposes to increase their capital to £3,000,000, and invites subscriptions towards the new capital. On June 6th, the day that the report of their annual meeting (the twenty-first) appeared in the papers, the 2s. deferred shares of the Maypole Co. were quoted at 23s., a rise worthy of a first-class rubber company.

Speaking at the annual general meeting of the Royal Mail Steam Packet, Sir Owen Phillips, G.C.M.G., M.P., the chairman, told those present that "Great Britain has especial reason to be proud of the part played by its mercantile marine in the conduct and successful issue of the war, and the Royal Mail Company has done its full share in this connection. Our vessels have acted as armed merchant cruisers, hospital ships, transports, &c.; we have carried great numbers of troops, enormous quantities of munitions of war, meat, and foodstuffs; whilst our sea and shore staffs have served in large numbers in His Majesty's Forces. Many of our larger steamers are now undergoing re-conditioning after the strain of war service, and their re-delivery to us as soon as they have been thoroughly overhauled should ease the situation to a considerable extent. I trust it may not be very long before we are able to recommence our mail service between Southampton and Brazil and the River Plate, together with other important services which we have been obliged either partially or wholly to discontinue for the time being.

"Throughout the war Great Britain and her Allies have enjoyed the sympathy of the vast majority of the people of South America, and the supplies of meat, cereals, and other essential commodities which they have sent have helped us materially in these difficult times. The great South American Republics, with their vast resources and immense potentialities, will in the future be largely depended on by the nations of Europe as sources of supply of many of the necessities of life."

We went to press on the top of the Whitsun holidays, the first real summer-break we have had since the war started nearly five years ago, and the weather was worthy of the occasion, the most perfect spell of sunshine imaginable. This, however, leaves us with "broken-up" markets to discuss. Copra after touching £60 and £62 at Marseilles had dropped off to £56 10s. London, or £61 10s Marseilles by June 6th, when the holidays started; at the time of going to press prices were slightly higher. Owing to this rise in certain oils and fats, including coco-nut and ground-nut, these are to be controlled again.

The Brazilian Coffee crop is now almost closed and

shows a big falling off, the receipts being as under, crop year July-June:—

Brazilian Coffee Crop—	1918-19		1917-18		1916-17	
	Bags		Bags		Bags	
Receipts at Rio ...	1,614,000	...	2,758,000	...	2,165,000	...
" " Santos ...	7,048,000	...	11,719,000	...	9,639,000	...
Year's receipts ...	—	...	15,095,000	...	12,113,000	...

Whilst the shops are talking up and putting up the price of all cotton goods, the raw cotton market is quiet and inclined to go lower, with a quotation for fully middling American of 18·68d. per lb., sliding down to 17·56d. for September, 16·96d. December, and 16·46d. for April, 1920. T.N. Shellac stands at 332s. 6d. to 335s. against 275s. to 280s. for A.C. blocky, but "futures" for T.N. were above these rates. Rubber was steady, but below sellers' ideas for values, say 1s. 10d. or a little more for Standard No. 1. crêpe and about 1s. 9d. for smoked ribbed sheet. Against these hard fine was worth 2s. 5d., soft fine 2s. 2½d. and caucho ball 1s. 6½d. No quotations are given for coconut oil, but £93 is the price of first castor oil naked, ex Works Hull. Copper was worth between £79 and £80 and tin £234.

The London Cocoa Market.

BY THE EDITOR.

CONGRATULATIONS to the *Times* on their Trade Supplement, and especially on their Latin American Section for May 31st. The contents are good throughout, but the article on Animal Industries, p.xviii., on "Central America," by L. E. Elliott and on the Cacao Industry, by E. A. Browne, deserve special mention. I should like to have been able to reproduce them here. Both the writers whose names are given are well known in Anglo-Latin American journalism on account of their data being reliable and their knowledge widely spread and resting on personal investigations made on the spot. Both these writers have been, and still are, Friends of TROPICAL LIFE. Miss Lillian E. Elliott in May, 1918, and Miss Edith A. Browne in January, 1917.

Discussing the cocoa market, Miss Browne points out how completely the United States now dominate the Latin American cocoa trade, being the chief buyers of the best qualities. One day, maybe, the United Kingdom will see the errors of its ways and compete with North America for this inimitable cocoa, and by doing so will raise the value, as it should be raised, to a level sufficiently high to enable local producers, or the manufacturers themselves, to unite and increase the area under these choice kinds which are at present likely to become scarce to extinction. Again this wide-awake authority reminds us that if we want to sell goods to Latin America we must buy from the Republics and the more we buy from them the more they will buy from us. Let us, therefore, start buying the choice cocoa from the Central Americas, and then we can please chocolate consumers at home, and those having goods to send out there as well. At the same time a word of warning is given to the Latin American planters, which, I fear will fall on deaf ears. If these choice growths are not to be allowed to die out, no

"Creole" planter will prevent such a catastrophe, without the help of England or America; better still England and America must come in and work together with the local planters if good results are to be expected. "If the Latin American growers," wrote the authority in the *Times*, "are to flourish they must look to theirs. Competition has become too keen for them to permit of a continuation of the primitive methods which prevail on the cocoa estates. So-called plantation after plantation is almost as much of a wilderness as the primæval forest in which it is located, and inferior quality beans resulting from careless cultivation are frequently further reduced in value by unskilful methods of curing."

This is plain speaking, but no exaggeration. Sir Hugh Clifford's warning to the careless native producers on the Gold Coast would be but child's play, I am sure, to what he would have to say to the Latin Americans, were that keen and thoroughgoing Governor suddenly to find him placed in charge of the cocoa planters between Mexico City and the Amazon instead of taking up the Governorship of Nigeria to which he is about to proceed.

This reminds me, those interested in African producing centres and in the Empire builders that have done and are doing so much for that portion of the cocoa-producing world, should send sixpence to "West Africa," (28, Fleet Street, E.C.) and read in their issue of May 31st the report of the speeches following the dinner given by the West African section of the London Chamber of Commerce, to Sir Hugh Clifford, on his appointment to the Governorship of Nigeria. Events are moving swiftly everywhere, including West Africa, so the speeches by the head of the Elder Dempster Line (the Royal Mail to Latin America and of many affiliated lines), Sir Owen Philipps, who took the chair, followed by the guest of the evening and then by Lord Emmott, Sir George Fiddes (on behalf of that most troublesome department the Colonial Office), Sir Walter Egerton, Mr. Batty and others, will find much instruction therein. Other speeches by Sir Hugh Clifford, viz., at the Royal Colonial Institute, at the Welfare of Africans' gathering to establish a hostel in London, and a fourth after Mr. Dennett's (Our Friend in October, 1918) paper before the African Society are all worthy of attention, as West Africa is so much to the fore as a cocoa producer that planters elsewhere cannot learn too much about what is going on in the African colonies. Sir Hugh Clifford has much to tell us on the subject, and his information is up to date.

I see by the papers that an already established trading connection on the Gold Coast has been formed into a limited liability concern as from May 17th, when Vasmarnet Cocoa, Ltd., was registered with a capital of £100,000 in £1 shares. The objects of the new concern are to take over the business of produce and general merchants carried on by S. Barnet as S. Barnet and Co., registered in the Gold Coast Colony, and to carry on the business of planters and dealers in cocoa, tea, kola and other produce of any kind. Mr. G. C. Vasmer and Mr. S. Barnet are the first directors. Registered Offices, 65, Fenchurch Street, London, E.C.3. I hope that powers will be included to deal in a similar way with Ceylons and choice Latin American and West Indian cocoas as well, so as to inspire more confidence,

because of the increased competition that would ensue, among producers of these superior grades. The Gold Coast has a huge output and on that account draws much attention to itself. It is the old idea that "unto him that hath shall be given and to him that hath not shall be taken away." No doubt it is entirely the fault of the producing centres in Latin America, that no one seems willing to go there to plant cocoa, but since the world at large needs that class of bean, why not arrange to secure larger and more regular supplies by forming a company to plant and produce these grades ourselves. A corporation including leading planters and manufacturers like the one recently formed between the African Association, Messrs Millars and Swanzy, &c. (who control the manufacturing firm of Messrs A. and J. Caley, Ltd., of Norwich), could do a great deal to save choice cocoas from going out of cultivation and enable the makers to "pull up" the quality of the manufactured article. This new corporation is to have a capital of about ten million sterling. I could do a lot in Latin America with two millions.

A letter in from Messrs F. Stephenson and Co. of Bahia, reports that their 1918-19 crop had ended and the total output had exceeded even the more sanguine estimates of 800,000 bags, the twelve months' total coming to 801,484 bags. This too in spite of the mosquilla and thrips pests, and, strange to say, they have exported almost the same quantity. This means, therefore, of course, that the stock at the end of April this year is exactly what it was on April 30th, 1918. What that figure is I have yet to learn. Here are the Bahia exports for the twelve months of their crop year, May-April, as compared with the receipts of 801,485 bags:—

Bahia Exports		1918-19	1917-18	1916-17
		Bags	Bags	Bags
May-February	...	598,451	666,413	634,370
March	...	117,380	63,618	35,834
April	...	85,296	20,786	73,927
Total	...	801,127	750,817	744,131

Of the 202,676 bags exported in March and April, America received $83,740 + 48,266 = 132,006$ bags in all.

The tables of receipts for March and April have also come to hand. The 1917-18 crop was 810,000 bags against 625,772 for 1916-17 and 819,838 bags in 1915-16.

The most interesting news received since my last report comes from America, especially as all good planters, like all good pilgrims turning to Mecca, must look to New York for a stimulant until France is in market again and England wakes up and wants fine cocoa. Prices, it is true, are good over here, very good indeed, but there is still that lack of interest in the best grades of cocoa that is so unfortunately characteristic of this market. You may like fine cocoa like a fine woman, immensely, but if you persist in remaining cold or are ashamed of showing your appreciation, you must not be surprised if your supplies of fine cocoa, like Zita, the gipsy woman in "The Gadfly" (by E. L. Voynich) one day lose patience and, much as they would like to remain, go off never to return. When this happens you have no one to blame but yourself, only it is hard lines on others, especially when it is raw cocoa. "Cocoa prices here," writes the editor of *The International*

Confectioner from New York, "are all making new records. We believe that they are going to remain very high for the balance of this year. Cocoa arrivals are considerably less than they were for the same period a year ago, but within the last week or so manufacturers have been buying more freely. Most of them are sold up for several months ahead so must secure supplies."

All this looks healthy from the planters' point of view and with the London market as high as it is and the French buying which sent prices in Trinidad up with a run at the beginning of the year, remunerative prices should be in force for a some time ahead. Of course cocoa planters, like everyone else, must learn to look after themselves; a "tight" time is ahead of us, everyone will be pinching and saving, so the cocoa producer must see to it that the pinching is not all one way. If he does not the buyer will take care of himself and it will not be the buyer who is pinched.

Cocoa planters must also keep an eye on the sugar crops, as well as on the prices ruling at the various cocoa consuming centres. If the price of sugar runs up too high; and a rise in cost is, we are told inevitable; then the consumption of cocoa is bound to be adversely affected. Whilst the war waged, we all tried to eat unsugared cocoa or to use very little and the results were not favourable to the cocoa planters, neither will they be if sugar gets too dear. Study *The Louisiana Planter*, also Willett and Gray's circular, they will teach you much, and show where and why we are a million tons short in the sugar output this season. One million out of seventeen is a bigish proportion when even on the bigger crop last year we all went short. Think Mr. Cocoa Planter, how the manufacturers will fare up to December, 1920, when you read what the above authorities have to tell you.

Meanwhile, since reading the article in the *Times*, I received a letter from a friend in Jamaica who has had to do with West Coast (of Africa) cocoa men when they went to Jamaica to study planting methods in order to compare the African ideas on cultivation with those prevailing in the West Indies. "One of those who were over here," my friend writes, "told me in his last letter that he believes some of the cocoa areas on the West Coast, if not doomed to extinction, will show heavy decreases in their outputs on account of neglect and disease. If this continues the danger from that source which at one time threatened the West Indian planters will be considerably diminished in the not distant future."

The Portuguese authorities have taken official notice of the harm that pests are doing, thrips especially, to the cocoa in San Thomé and have sent the Director of the Botanic Gardens at Lisbon to investigate the matter on the estates. A heavy reduction in the output already is spoken of, but unfortunately no figures are given either of the production within or the exports from the island. I am anxious to ascertain how these work out.

The near future will be interesting both to planters and manufacturers, for it will be a great toss up as to what the estates will turn out in the aggregate. The Bahia crop, now commencing will be late and short at first although it is believed probably that after Christmas it will pick up sufficiently to make up for

its earlier shortage. San Thomé as stated above is in trouble, and in the absence of particulars one cannot say whether later on she will also pick up. Trinidad it will be remembered has, all this year, been bothered with the weather especially the spell of dry and drying-up (on account of the wind) atmospheres that prevailed early in the year. This will affect the cocoa shortly to be picked; in the same way it is hoped more recent rains will encourage a bigger output later on, and so balance the two half seasons. Mr. Rorer, from Trinidad, is out in Guayaquil, but how things go there I cannot say, and their returns do come in so dreadfully slowly. Grenada continues to be backward in her output, the total export to May 9th being 43,395 bags against 59,613 last year, and 65,808 bags in 1917. Against this, Trinidad by the end of April, or for seven months out of her crop last year, had exported 173,000 bags, of which 124,650 went to France and only 23,000 to America, whereas in 1918 America received 139,000 and France only had 2,100 bags. America therefore, should have some lee-way to make up as regards buying.

The details of the Cadbury—Fry combine have been published. Their nominal capital is £2,500,000. Messrs Rowntree, the makers up at York, came on the market for capital as stated last month and Messrs. Pascall are now reported to be out for £100,000. All this is to the good. With the Empire to feed, both England and the self-governing colonies should have the biggest and best chocolate and cocoa factories in the world instead of allowing countries like Switzerland and Holland to forge ahead as they have done. Whose fault is it, one wonders, that we have always been so slow at coming forward in this line? America, on the other hand, runs a chance of being over-optimistic partly owing to the war-boom for her preparations—a clientèle that we never encouraged; and partly on account of the total prohibition movement over there. As a result of this there has been a tremendous influx of new capital into the New York concerns and a general all-round increase in the machinery and plant laid down.

Coming now to stocks and values, London on June 14th had under 110,000 bags on hand, as under:—

	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads	17,759	12,719	29,184	24,774
Grenadas	9,523	20,163	30,028	14,836
Other W.I.	2,417	7,017	30,391	4,976
British African	41,681	43,714	50,885	35,580
Portuguese African	4,480	4,665	19,190	31,251
Cameroons	476	4,246	17,048	3,884
Ceylon and Java	9,188	20,833	37,197	36,657
Guayaquils	19,323	37,087	61,798	19,445
Bahia and Brazil	986	4,279	8,156	11,049
Other foreign	3,288	7,621	8,313	8,865
Total	109,121	161,744	291,390	191,317

Against this Havre shows a substantial increase thanks largely to 64,000 bags of Guayaquil which came in during May, also besides this stock there were some 214,000 bags lying off Havre waiting to be cleared and brought into the warehouses, and other steamers with more cocoa are expected to arrive at any moment. This port, therefore, can well be said to have some 370,000 bags on hand (against 10,000 bags only on

February 28th) with every chance of adding to the number, for deliveries seem being made at a comparatively slow rate. What Bordeaux is doing I have not ascertained, but hope to do so before we go to press. Meanwhile, the United Kingdom had 57,200 tons in stock at the end of May. This at 15 bags to the ton means about 858,000 bags, so there is plenty of cocoa over here to feed Europe when Europe shows definitely what it requires and what it will pay. That in turn will depend on its necessities and the money left to buy cocoa with when the edge is taken off their appetite for the other necessities of life.

Havre Stock, May 31st—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	2 601	148 to 153	1,584	134 to 138
Bahia ...	30,211	142 „ 153	13,405	130 „ 136
Venezuela ...	5,882	160 „ 225	9,544	135 „ 175
Trinidad ...	15,010	158 „ 165	18,146	135 „ 140
Grenada and O.W.I.	5,323	153 „ 165	13	128 „ 132
San Thomé ...	4	142 „ 153	743	128 „ 134
San Domingo ...	—	135 „ 140	1,286	127 „ 139
Haiti ...	11,441	125 „ 150	2,724	120 „ 128
Accras, &c. ...	16,427	125 „ 132	3,130	120 „ 126
Guayaquil ...	66,048	155 „ 165	10,975	138 „ 144
Others ...	1,325	—	5,163	—
Totals ..	154,272 bags		66,713 bags	

The Board of Trade figures for May are returned as under:—

Raw Cocoa Movements in the U.K.—

	Landed, Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, May 31st. Tons.
Jan., May, 1917—	44,432	22,640	4,005	56,900
„ 1918—	9,803	28,164	583	25,250
„ 1919—	61,303	27,022	1,022	57,200
Incr. 51,495	Decr. 1,142	Incr. 439	Incr. 31,950	

Of the landings, 44,799 tons came from British West Africa, 6,255 from Ecuador and 4,943 tons from the West Indies. The proportion from West Africa therefore, is over 70 per cent. Whilst it will be noticed that deliveries for Home Consumption during the above five months show a falling off, those for the foreign manufactured article show, comparatively speaking, a big increase over last year, being 1,172 tons this year against only 181 tons for January to May, 1918. Lisbon received 106,750 bags during May, and delivered 35,414, leaving her with a stock on May 31st of 125,925 bags against 98,264 last year.

Sales continue good and prices high, Liverpool is paying up 90s. and London has given over 90s. for Accra kinds and 120s. for Jamaica's. No sales took place on June 10th as that was Whit-Tuesday, but generally speaking these holidays found good medium Trinidads at 123s. 6d. and Grenadas and O.W.I. about the same, or a little less. Cameroons had sold at 115s. and 115s 6d. for long piles, Arriba Guayaquil was worth 122s. or 123s., Costa Rica had realized 120s., good boldish Panama 108s., middling Venezuelan 130s. to 132s. and fine up to 159s. 6d., a record for sales under the hammer. Bahias were offered but all bought in, they are worth about the same as Grenadas. Ceylons fetched up to 154s. 6d., a high figure. Fine small 126s.

Since then sales took place on June 17th, when Trinidads sold at 124s., for good medium; Grenadas up to 126s. 6d., for fine and Jamaicas at 123s., against Cameroons again at 115s. and once at 116s. Venezuelan touched 161s., and Ceylon fetched 150s.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 7.]

JULY, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
Tropical Experts on "Tropical Life"	97
How to get rid of Thrips—Part I.	98
Sisal for Selling. No. X.—Sisal in Mysore	98
"The High Price of Sugar"	100
What does a Shipping Controller control? (with Cartoon) ...	101
China, Japan and the Coco-nut Planting Industry	102
The Future of Cotton Growing in India... ..	102
The Coco-nut Industry in Malaya	103
"Tropical Life" Friend.—No. 169	104
How to Increase the Demand for Raw Rubber... ..	113
The New President of Brazil	113
The next London Rubber Exhibition and Congress	114
The Woman's Part in Tropical Development	115
The World and its Food Supplies. Part XII.—Soya Beans... ..	115
Trade, Politics and Finance	116
The London Cocoa Market... ..	117

Tropical Experts on "Tropical Life."

"I AM glad to see that you are keeping up the utility of TROPICAL LIFE to a very high standard," writes Professor Carmody, formerly Director of Agriculture, Trinidad, "you keep the practical side of tropical agriculture—which is the main consideration—going 'over the top' all the time."

"I know of no oil-palm plantations run by Europeans in Nigeria or British West Africa, although there are many worked by chiefs and their families. These could be vastly improved by them if they would adopt some of the hints thrown out by such men as F. M. Milligan, Paul Hubert and H. Hamel Smith," Mr. R. E. Dennett, late Senior Conservator of Forests, Nigeria (and "Our Friend" in October, 1918), told a big gathering of the African Society at King's College in the course of his address on "Agricultural Progress in Nigeria," when half a dozen Governors were present.

Writing later, on the leading article in the May issue on "Agriculture in the Tropics for ex-Soldiers," Mr. Dennett told us, "I think the 'central plan' a good one for those countries where the white man can work with his hands. Two or three determined men working together on a farm could do wonders, but once they begin to employ black labour instead of doing the work themselves their troubles begin. The days of big plantations in Africa are numbered."

"I regard the Editor of TROPICAL LIFE," our financial contemporary, *The Empire*, told its readers, "as a true and plucky pioneer of Empire, for by his journal, books and lectures, he has done as much as any man in the country to bring into prominence the inexhaustible natural wealth of the Empire that still remains undeveloped. He has strong views, based on personal knowledge and experience, adopts an emphatic, bull-dog style of expressing them, and is the friend and confident of every tropical planter and agricultural expert. In London he is consulted whenever there is any difficult problem to be solved connected with tropical agriculture."

"I congratulate Mr. Hamel Smith on his great and successful labour in his book, 'How to Pay for the War,'" writes Lord Leverhulme in the "Foreword" which he has been good enough to contribute to the second impression of this book, which will shortly make its appearance. "The whole human family, the world over of all races and colour, looks to the United Kingdom and its people for help and guidance in development and progress, and it is our duty to respond fully and immediately, without hesitation, to those calls upon us, and we are deeply indebted to Mr. Hamel Smith for his book, which indicates so

clearly the many directions in which our help and assistance can best be given."

In "How to Pay for the War," pp. 27 and 39, it will be remembered that we ask for a Minister of Production for food-stuffs especially wheat and raw materials. Malaya has given us a precedent since the report of the Planters' Association of Malaya tells us that a Director of Food Production was appointed on February 12th, 1919, with the idea of increasing the local production of food-stuffs in order to relieve the present position and act as an insurance against acute shortage in future should there again be a similar falling off in imported supplies. The Controller has power to order that a proportion of any land held on agricultural lease be devoted to the growing of food-stuffs, and may commandeer the necessary labour for the purpose.

The encouraging of local food production is a step in the right direction, though it may be doubted if production on a scale sufficiently large appreciably to affect the position can be carried on in a country where the resident population is so extremely sparse, and where the supply of labour imported for the existing industries is in a chronic state of failing to meet the demand.

If Malaya finds it a good plan to have such an official, what about the Empire at large which needs so much to keep it going and has such huge areas awaiting development, which could produce these supplies.

How to get rid of Thrips.

THOSE troubled by the prevalence of thrips and other pests at the two Portuguese-speaking cocoa centres, San Thomé and Bahia, should derive comfort at the simple remedy suggested by leading authorities to be quit of such nuisances; simple, that is, to any owner interested in and who takes average care of his trees. Thus the *Agricultural News* of Barbados, in the issue of May 17th, tells us that "Not long ago the attitude of planters and investigators towards plant pests and diseases was that the insect causing the damage, or the fungus causing the disease, was the main thing to be investigated. Now observers, whether planters or technical workers, are being forced to the conclusion that the health and vigour of the attacked crop or plant is frequently the determining factor in regard both to the attack and its remedy; consequently, plant pests and diseases assume a wider significance."

By the same post that brought us the above paper, came a letter from Mr. Archibald Brooks, head of the agricultural department at St. Lucia, in which he says:

"Re thrips, it may not be that unhealthy trees attract them like 'garbage attracting flies,' for thrips are always with us, but so long as the trees are kept in vigorous health, the thrips remain under control and do not appear to be able to do much injury. As soon as a tree becomes sick, no matter what the cause, it seems to lose all power of resistance and the thrips at once manifest themselves and take command, and no amount of attention paid to the destruction of the

thrips will be of service until the tree is brought back into a healthy condition.

"That means, first do all you can in the way of tillage, including shade, to get the trees back into good condition, then, and not till then, go for the thrips directly with insecticides. But, unless you first attend to proper tillage all the insecticides in the world are useless."

Van Hall, in his book "Cocoa," tells us that "Especially in places where the cocoa has suffered from wind, from drought or otherwise, or where the growth has been rather weak, the trees are affected by another enemy; thrips. Sometimes the trees attacked by these insects are to be found scattered here and there in the fields; often, however, rather large areas are attacked at the same time. The leaves turn yellowish and fall off, and for some time the trees stand almost leafless. New leaves are made again; but when the thrips again attack the new leaves, often the tree is much weakened and dies. This pest must have been present for some time in Surinam and before the cause of the disease was known, planters called it 'leaf-disease'; but leaf-disease is nothing else than 'thrips-disease' which damages the cocoa trees in several West Indian islands."

On pp. 280-281 of his book, Dr. Van Hall discusses this pest at some length, so did TROPICAL LIFE in Article No. xxiii. on "Coffee" last January, p. 4. Rain drives them away, and drought encourages them. All agree, however, that bad cultivation and trees in poor condition are the most likely condition to bring thrips into a plantation, coffee and cacao alike.

Elsewhere we are told that thrips are a minute sucking insect and, like black pod trouble (*Phytophthora*), can be controlled with remunerative results by Bordeaux mixture and nicotine sulphate. In our next issue we shall be discussing some of the mixtures that have been recommended for fighting this pest, and then go on to show what Mr. C. B. Williams, M.A., F.E.S., had to say on "Some Trinidad Thrips of Economic Importance," in a recent Bulletin of the Trinidad Agricultural Society.

Sisal for Selling.—No. X.

(Continued from the June issue, p. 87.)

MR. CHATTERTON ON SISAL CULTIVATION IN MYSORE.

IN the April issue of the *Mysore Economic Journal*, Mr. A. Chatterton, B.Sc. Director of Sandalwood Oil Factories, Mysore State, discusses the possibilities of sisal cultivation in Southern India. Sisal, or *Agave rigida* var. *sisalana*, is cultivated in India, it is true, but to a very limited extent. It was introduced into Mysore by the late Mr. Ricketts in 1892, and since then has been to some extent cultivated in Bangalore, but nothing worth mentioning seems to have resulted.

"Yet in 1914," Mr. Chatterton tells us in *Bulletin* No. 18, published by the Industries and Commerce Committee of the Mysore Economic Conference, "I drew attention to the commercial possibilities of sisal hemp in Mysore, but so far no one has been induced to take up its cultivation. All the same, I am still of opinion that its commercial possibilities in Mysore

are very great, although I have realized that nothing is likely to result from advocating the formation of planting companies to take up extensive areas of land with a view to the establishment of large plantations."

Evidently apart from its possible purely commercial value, the cultivation of sisal in some portions of India might help to keep poor land from becoming worse, or at least of giving a crop of some sort where none will grow otherwise. In such cases, whether in India or anywhere else, surely it is better to cultivate even a crop like sisal than to allow the land to go altogether to the bad?

Thus Mr. Cameron, who was curator at Lal-Bagh, in Bangalore, when sisal was cultivated there after its introduction by Mr. Ricketts, stated in 1903: "In my opinion the cultivation of sisal should be left to private enterprise, although in the case of arid tracts where *ragi* often fails to reward the *raiya*, it may be feasible to substitute a crop of this kind, should the demand arise to make it worth while, since the profit of an acre of suitable land yielding a fair crop is estimated at from Rs. 60 to Rs. 75 premium (in 1903). Loose stony land is preferable, and Mysore possesses plenty of such and, and if the latter can produce leaves of four feet in length it will do."

Returning to Mr. Chatterton, we are told that in his opinion "the principal reasons why sisal hemp cultivation has not been taken up in Mysore, although the plant grows readily enough and yields a high percentage of fibre, are as follows:—

"(1) Six years must elapse before any return can be expected.

"(2) The extraction of the fibre by hand is not possible as a commercial proposition.

"(3) The extraction of the fibre by machinery necessitates operations on a large scale and the investment of a large capital on machinery and plant.

"(4) There is no local market for the fibre, and small parcels do not command a fair price when exported."

Elsewhere Mr. Chatterton, speaking of the machinery required, tells us that "there are machines which will easily extract the fibre, but they are costly and require a large amount of power to drive them. They are hopelessly beyond the reach of the cultivators. Further, it is an unfortunate fact that, although aloes are extremely plentiful in Mysore, the species which have been introduced yield but a small percentage of a weak fibre with a comparatively small commercial value."

Then comes the chief point in Mr. Chatterton's remarks, which we would remind our readers were originally embodied in a *Note* to the Mysore Government. What he said in the following paragraphs has no doubt, therefore, got "right home" in the proper quarters, and will receive attention, although that, unfortunately, does not necessitate any action being taken. Here is the pith of it:—

"I have already referred to the plantation which has been started in Coorg, and in course of time other sisal hemp estates may be opened out. There are, however, excellent reasons why the matter should not be left to chance. Moreover, it is desirable that the cultivation of sisal hemp should be so developed that

the ordinary cultivators of the country could, as far as possible, participate in the benefits to be derived from it.

"The Mysore Durbar obtains a not inconsiderable percentage of its revenue from mineral royalties and from the sale of electric energy, which is still mainly used on the gold fields. Sooner or later this source of revenue will be extinguished with the exhaustion of the mines, and it will be a wise policy, while there is yet time, to create new sources of revenue to take its place. The electric energy may be used for other purposes, provided industries are created which will employ the power. Satisfactory progress in this direction has already been made, and there seems every prospect that, as electric energy becomes available, a market for it will be found in the growing industries of the State, but the gold royalties will gradually decrease and ultimately disappear, and it will be sound policy to look well ahead and endeavour to create new sources of revenue to replace this which will pass. In the last few years the public attitude in respect to the intervention of the State in industrial matters has completely changed, and there is no reason why the Mysore Durbar should not take active measures to create new industries if it is in a position to do so.

"It appears to me, then, that an excellent opportunity to do something in this direction is presented by the failure of private enterprise to take advantage of the natural facilities which exist for the cultivation of sisal. About one-half the area of the Mysore State is uncultivated, and there are obviously tens of thousands of acres of waste land which could be well utilized for the cultivation of a plant which grows best on soils which are perhaps favourably described as being on the margin of cultivation.

"The problem to be solved is to convince the *raiya* that it is worth his while to grow sisal hemp, and this can only be done by removing the difficulties which have hitherto prevented the development of the cultivation. The Government can assign land for cultivation of sisal free of *kist* (revenue or tax from land) for a period, say, of seven years, which would give sufficient time for the plants to arrive at maturity. The Government also can supply the plants, charging only the actual cost, and deferring the payment till the *raiya* begins to derive an income from them. It can also establish nurseries and model plantations in selected centres to demonstrate its faith in the future of sisal as an industry in the State of Mysore." These and other proposals advanced by Mr. Chatterton deserve a trial; we hope they will receive it. The suggestion made that the authorities should establish nurseries and model plantations supports our plea for same (see *TROPICAL LIFE* for May, p. 74), then the new-comers could work on the central model plantations for wages whilst their own land is being cleared and coming to maturity. Doing so will not only teach them how to run the plantations, but will help them to eke out a living whilst waiting for their own crop to mature. Again, the profits from this central model plantation should be divided among those who have helped to make them, if only as a stimulant to work willingly and carefully.

(To be continued.)

"The High Price of Sugar."

WHY NOT AN IMPERIAL BUREAU OF SUGAR PRODUCTION?

JUDGING from all accounts the name of this book should rather have been "The Higher Price of Sugar," as supplies seem so scanty just when it looks as if the blockade may be lifted, that one is forced to expect the demand to leave supply well behind and that must mean higher prices.

The Java crop is short; Russia is out of it as a serious supplier; Germany is very uncertain, and no one should want her sugar if she has any to sell; Austria-Hungary is no better; and France, thanks to Germany, will produce much smaller crops; lack of moisture will lessen the output in India, Demerara and Australia. It is surely time, therefore, for a genuine effort to be made to place the production of the British article on the right road leading to greatly increased outputs and to do so at once.

According to Messrs. Willett and Gray, crops will compare as under, and as everyone has been busily engaged in complaining of short supplies during the past twelve months, prospects for the immediate future are far from promising since supplies will be shorter than ever.

	1918-19 Tons	1917-18 Tons
Cuba	4,000,000	3,446,083
Other American Centres	2,617,229	2,270,929
India	2,337,000	3,311,000
Java	1,669,637	1,791,064
Other Asiatic	535,000	613,878
Australia and Fiji	306,000	396,700
Africa	578,000	511,166
Spain	6,000	6,000
Total Cane	12,048,866	12,346,820
Total Beet	4,390,092	4,866,789
World Production	16,438,958	17,213,609

The estimated decrease before the last returns from Cuba came along was 1,174,651 tons, or about 7 per cent. At that time the Cuban output was put at 3,600,000 tons only, yet in spite of this the *Board of Trade Journal* some little time back was responsible, so the *Indian Trade Journal* tells us, for the statement that many of the sugar planters in Trinidad were planting coco-nuts because they were afraid that the present very high prices for sugar would soon cease to exist. Even if they do, in face of all one hears and reads, the level of prices for cane-sugar, if they do not continue to be very high, should certainly be well above, and very well above, the cost of production. In any case it is to be hoped that, far from cane areas being allowed to go out of cultivation, they will be considerably increased.

On this account we welcome the appearance of two useful *Bulletins* from India, a producing centre that is doing so much, so far as the practical scientists over there are concerned, to put sugar production on a sound basis and then to extend the area cultivated. These *Bulletins* are: No. 82, on "The Improvement of the Indigenous Methods of Gur and Sugar-making in the United Provinces," and *Bulletin* No. 83, entitled "Progress of the Sugar-cane Industry in India during 1916 and 1917." Both are issued from the

Agricultural Research Institute at Pusa, and cost: No. 82, 10d. post free; No. 83, 7d. post free.

The latter, *Bulletin* No. 83, is worthy of note, because it is built up on notes submitted to the meeting of experts attached to the Board of Agriculture at Poona in 1917. Furthermore, it has the advantage of being edited by, and of having an introduction from the pen of Dr. C. A. Barber, the Government sugar-cane expert, and chairman of the Sugar Committee of the Board of Agriculture in India, 1917. The concluding sentence of this introduction tells us that: "The Board of Agriculture in India has unanimously supported the suggestion of the Sugar Committee that an Imperial Sugar Bureau should be formed, whose duty it will be to collect and collate the results obtained in various directions, and thus be in a position to assist the isolated efforts in different parts of the country with sound advice based on experience gained in India and other countries."

If India needs such a bureau, what of the Empire as a whole? If we are ever to make any real progress in becoming independent of outside producers of sugar, the sooner an Imperial Bureau of Sugar Production is formed, with headquarters in London, the better.

THANKS to a visit from Mr. William Fawcett, who used to be in charge of the Department of Agriculture at Jamaica, and called in for us on his way, we were present at the afternoon meeting of the London Section of the Society of Chemical Industry, when a discussion on the production and consumption of sugar within the Empire took place. It was held in the wondrously decorated banqueting hall of the Clothworkers Company in Mincing Lane with the old stained glass windows, one of them to the memory of Samuel Pepys; which reminded us, for the colour effect, of the windows in the Sainte Chapelle of Paris.

In the morning the meeting, under the chairmanship of Lord Denbigh, had received the report of the Committee, appointed in 1917, on the suggestion of Professor H. E. Armstrong, to look into the matter of our Imperial sugar supply and demand, when among the speakers was Sir Francis Watts, Imperial Commissioner of Agriculture for the West Indies, now home on leave. Discussing the question of Agricultural Colleges with him after the meeting, Sir Francis confirmed the reports we had heard of the matter having been more favourably received at headquarters of late, and that, with a little patience and persistency of effort, we ought to see the two Colleges established, one in Ceylon and one in the West Indies, before many more years roll by.

In the afternoon our book on "The High Price of Sugar" was mentioned in connection with the output in India, and those present supported all we urge as to the importance of India as the most likely centre to increase the supply on a large scale. Professor Carmody, formerly in Trinidad, and Mr. Sandbach Parker, the well-known estate owner in British Guiana, were among the speakers. We agree with Professor Carmody when he congratulated the Committee on the report and the useful debate that it had aroused.

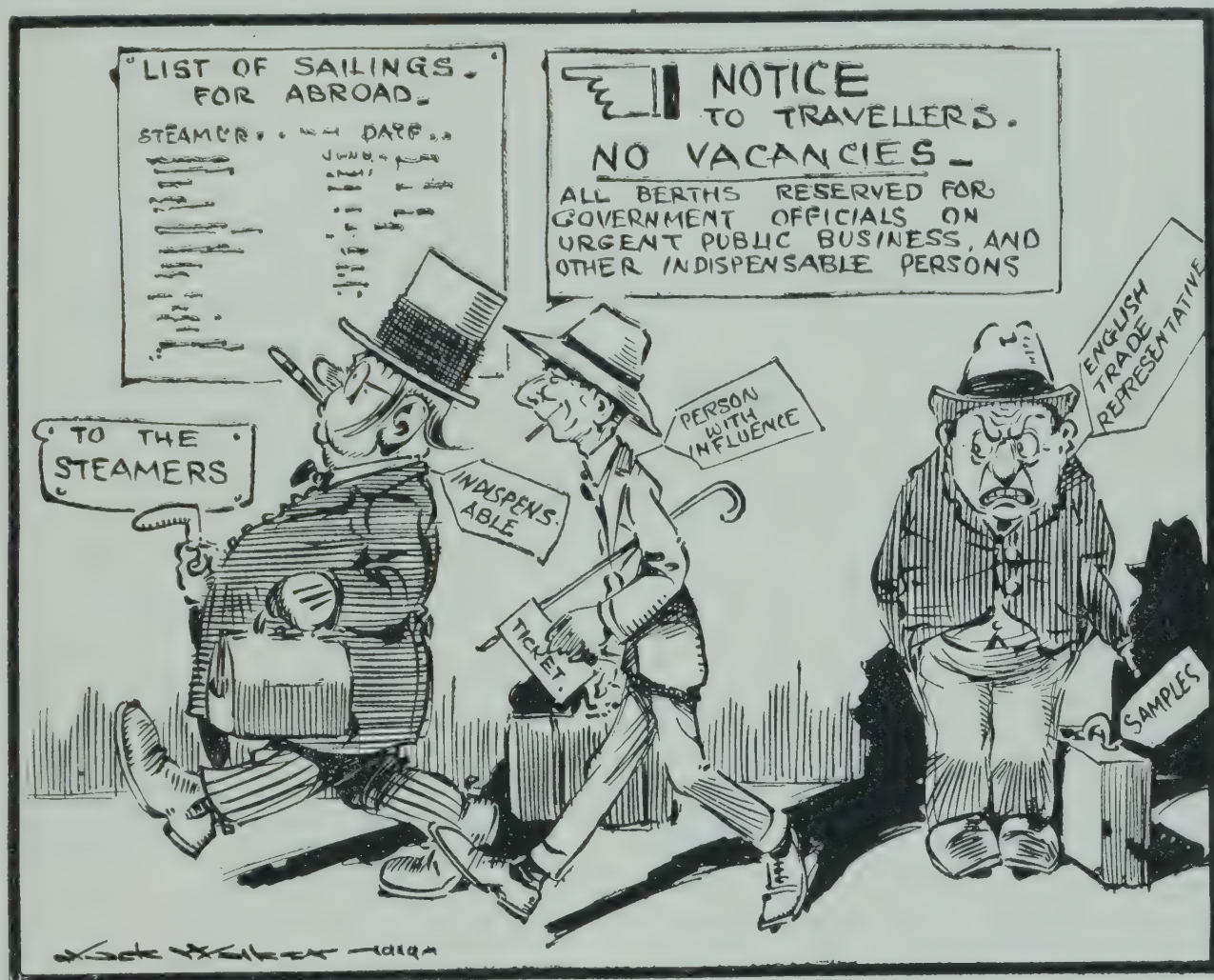
What does a Shipping Controller Control?

COMPLAINTS, like swallows in the autumn, have been gathering over our heads in increasing numbers from those who want to go abroad and attend to the banking, commercial, agricultural and other industries of this victorious country, but who seem unable to move. The delay is causing our factories to be short of orders (maybe they are glad that this is the case) and our work-people short of employment. In any case the Empire must be suffering severely because passages are not available. Whose fault is it, since plenty of boats go out, and it has been reported that many berths are still empty when they sail?

From the personal point of view, the lot of those who have been helping to win the war, by remaining

had by mistake run completely out of copies. We have none left for binding. The appeal is still open. A possible cause of the holding up of these berths so that bank and mercantile staffs, commercial travellers and trade representatives cannot go to the tropics is suggested by Mr. Jack Walker in the cartoon that he contributed to the *Daily Graphic* of London just after we went to press last month. We have to thank our contemporary for its loan. Now that "Our Friend" for May, has called attention to the trouble, some redress will, we feel sure, be forthcoming.

At the same time, vexatious as the ways of the Shipping Controller and his staff, both here and abroad, may be, we do suggest that those travelling for their health and to get home, should make sure that they



Courtesy of Daily Graphic.

And the Other Countries Get the Orders.

at their work in the tropics, and now want to come home for reasons of health, is equally harsh, so much so that, as has been proved by the case of the s.s. *Marama* from the Straits and Malaya, the public will run the gravest risks in order to get home. Who are the authorities or officials who allowed such risks to be run? It will be interesting to know. Whose fault has it been? Will it occur again? How can such a state of affairs be remedied? The answer to the first three queries can only be obtained by application to the shipping authorities. Of course, it could not be accounted for by the reasons suggested in the cartoon published in our January issue; which by the way, caused such a run on that issue that we were obliged to appeal to our readers and advertisers to be good enough to return their copies if done with, as we

will benefit by the change. Details of the scandal of the *Marama*, whosever the fault may be, should be pasted up in all large ports as a warning to those who try to force the hands of Fate. Fate or the Controller never get harmed, it is those who try to force them that get into trouble. No doubt such a horrible state of affairs will not ever be approached again, but even as it is, one wonders why shipping authorities exist and are paid salaries, and what the good of the Shipping Control over here can be to the general public anywhere.

When decent women describe the voyage home, even *before* they have gone through the Red Sea, even before they reached Colombo, in the terms that they wrote back to their husbands in Malaya, one can well sit up and wonder what control and authority meant

"out East." "How any of us are alive, only the good God knows. We have gone through H—. There have been two deaths already (children), the wards are so frightfully packed and the port holes cannot be opened. . . . The dining-room is like a mad-house, and the children worse."

This is but one of the many letters. We give this extract as a warning so that others anxious to get home can realize that undue haste may only bring worse evils in its train. Ask all the queries you like about the shipping authorities both here and abroad, but do not get mixed up in another boat like the *Marama*.

Anger is justified when one remembers that about the same time more than ample room was given to the "Returned Empties" from China, less than eight hundred Germans being on board a ship that is said to have taken two thousand British troops to India. How many passengers the *Marama* had in comparison we do not know, but can sympathize with one of the victims who asked: "Why didn't they tell us we were to travel like refugees and pay £54 per head to do so? If they had, not one of us would have moved from our comfortable beds."

Perhaps after all, one or two people may find out what the duties of a shipping controller and his staff consist of—who knows? If commercial men cannot get out to the Colonies and tropics, at least we must protect the women and children coming home.

China, Japan, and the Coco-nut Planting Industry.

INCREASING DEMAND FOR BOOKS ON TROPICAL CROPS AND AGRICULTURE.

DURING the war we have had a surprisingly large number of requests from our readers abroad to translate one or other of our books into their own language, especially "The Rubber Industry of the Amazon." Negotiations are still being carried on, but the terms offered us are, as a rule, too one-sided to be acceptable.

After "The Rubber Industry," our books on Coco-nut cultivation are the most sought after, especially by the Japanese, a fact which our American and other coco-nut friends will no doubt take due note of. Much of this correspondence comes direct from Japan but some also comes from the Federated Malay States. We are reminded of previous letters by the receipt of the following one dated Seremban, May 10th. Strange to say, our Japanese correspondent thinking Lord Leverhulme was the author, addressed his request to him, but the mistake was rectified by forwarding the letter to us. We reproduce it without the name as an up-to-date proof of how closely the Japanese are watching the industries which centre around coco-nut production. There is no doubt that inability to ship the copra and oil whilst the war was on, caused large quantities to find their way into China, Japan and elsewhere to an extent never known before. Once there, however, the demand, or a goodly portion of it will remain, and a new area of competition has thus been called into being against European and American

buyers. Meanwhile, the Chinese and Japanese traders want to ensure supplies for their future requirements by taking up planting themselves. Siam also is doing the same for as long ago as 1913, when the first edition of our book was out and about, we received good orders and some very complimentary letters on the usefulness of such a work, from Bangkok.

Returning to our Japanese correspondent, this is what he says:—

"I have taken a great interest in the study regarding the cultivation of the coco-nut palm, and should deem it a great honour if you would kindly permit me to publish a Japanese translation of the whole or part of your esteemed work on Coco-nut cultivation, second edition. Should my request be accepted not only I, but a good many of my fellow country-men, who are also interested in this same line of study as myself, would greatly benefit by such a book. Hoping therefore, to receive your sanction, &c. &c."

There is the letter, quite a simple one, and not the first of its kind that we have received from one or other of our Japanese friends. Such correspondence shows, however, first-hand, what is going on in the minds of the go-ahead men in the Far East and how they are steadily working in many cases the same as ourselves to the same goal, viz.: to assure future supplies of tropical produce without which no people to-day, civilized or uncivilized, can thrive or even exist in great numbers.

Long ago we warned employers of tropical labour of this competition, as when urging them to increase and not kill-off the native labour in the tropics. As the number of the black races go back so will the white, but not the yellow race. Therefore, it will happen if we are not careful, that, one day, the yellow race will pick up the remains of the blacks and, intermixing with them, training and guiding them, in a way the white race can never do, will dominate the world, not by force of arms, but merely by their ability to safeguard and increase the supplies of tropical labour and thus obtain for themselves those crops of vegetable-oils, &c., which have become a prime necessity of all leading nations.

The Future of Cotton Growing in India.

As with sugar, India could do great things both for the Empire and for herself by increasing and improving, but mainly by improving, her present output of raw cotton. Like the bulk of the cattle in hot climates, the cotton produced in India is not suitable for this country, the cattle want to be better fed and better bred altogether, so does the cotton. It is but a matter of patience, *plus* seed selection, knowledge, and better cultivation, all of which are at the beck and call of any man or woman, if they have the energy and the will to beckon and call.

So Lancashire watches India, feeling that it is the most promising source of supply for her raw cotton supply, ranking second only to the United States. With comparatively little trouble the size of the Indian crop can be doubled and the quality improved. The soil is generally fertile, the climate suitable, the popu-

lation industrious and the industry profitable. The advantages of an alternation of cotton and grain crops in a thickly populated country like India must also be borne in mind.

Before the war 73 per cent. of the Indian crop was exported, mainly to Germany. During the war Japan has practically taken Germany's place as a purchaser. These lower grades of cotton are valueless to Lancashire spinners, and the efforts of the Indian and British Governments are now to be devoted to improving the quality even more than the quantity of production by extending the irrigation system and increasing the technical supervision and advice given to planters.

One of the causes of the low quality of the Indian staple is said to be due to the mixing of cotton in the ginneries and consequent deterioration of the seed sown the following year. This it is proposed to remedy by licensing ginneries, as in the Sudan, and penalizing mixing or fraudulent damping of the cotton by a threat to withdraw the licence. In addition, it is proposed to create local cotton markets under Government supervision with an official grader and standard weighing machines for protection of small growers. It is likewise proposed to start buying agencies, seeing that the cultivator will at first be able to raise only limited quantities of better grade cotton and that in the open market small lots will not command their true value, owing to difficulties of handling and transport.

Another method of improving cultivation is by the establishment of model plantations which, within a few years, would form a chain running through the cotton area. These could be run on the lines laid down in our leading article in May, "Agriculture in the Tropics for ex-Soldiers." From what we saw of the Indian troops over here, thousands of men should be glad to turn to cotton planting, alternated with other crops, if shown how to make a "sure thing" of it, and they can be shown this by working on the central model farm for wages whilst their own piece of land is being prepared and planted up. By some such plan a living is assured to the ex-warriors and their family, for the help of all will be needed, and the benefits to be obtained from the improved quality and increased quantity of cotton produced will extend many thousands of miles from the individual areas and units in the population turning out the crop.

The Coco-nut Industry in Malaya and its future Prospects.

ACCORDING to the report of the Standing Committee of the Planters' Association of Malaya, presented at the twelfth annual general meeting on April 30th, the area under coco-nuts on estates of over 100 acres was given at the end of 1917 as being over 100,000 acres for the whole of Malaya. The area in smaller holdings is uncertain, but may be approximated at from 100,000 to 125,000 acres, giving a total of from 200,000 to 225,000 acres at the end of 1917.

In the absence of definite figures we may record the opinion that the amount of new plantings is small, and would, perhaps, about balance the areas of un-

profitable coco-nuts that have been cut out, or abandoned during the year. The acreage at the end of 1918, therefore, may be taken as being about what it was at the end of 1917, with the remark that most of the new planting has been done on land shown by experience to be suitable to the profitable cultivation of coco-nuts; whereas most of the reduction of area has been where the coco-nuts were under unsuitable conditions.

The price of copra during the year ruled from \$6 to \$11 per picul, compared with \$4.50 to \$8.50 last year. Prices improved steadily throughout the year, and the prospect is that higher prices will be maintained during 1919.

Coco-nut growing, with the production of copra as its end point, runs on a very narrow margin of profit per acre; and this fact, together with the difficulty of establishing a plantation, and its high cost of upkeep, have tended to check rapid extensions of the industry.

However, in view of the shortage of edible oils throughout the world, and the suitability of coco-nut oil for edible purposes, there is a strong probability that coco-nut plantations will find it profitable to discontinue the sale of copra for export, and, either co-operatively or otherwise, produce and export coco-nut oil of an edible grade. In fact, some progress has been made towards this end.

An object lesson in coco-nut development in the Philippines has attracted considerable attention locally. In 1912 the Philippines exported 169,000 metric tons of copra, and almost no coco-nut oil. In 1912 modern oil mills were established. In 1913 the export of coco-nut oil came to 1,300 metric tons. By 1916 it was 16,000 metric tons; and in 1918 over 100,000 metric tons of coco-nut oil were shipped. The value of 100,000 tons of coco-nut oil is about £6,000,000.

THE Right Honourable Lord Weir of Eastwood has promised to open the Shipping, Engineering and Machinery Exhibition at Olympia on September 25th next. This Exhibition, of which Sir Owen Philipps, G.C.M.G., M.P., is Hon. President, Sir Archibald Denny, Bart., Chairman of the Committee of Experts, and Mr. F. W. Bridges, Secretary and Organizing Manager, was to have been held in the autumn of 1914, but in common with other important events had to be postponed on account of the war. The present time is, however, a very suitable one for it, and will afford the general public an opportunity of becoming acquainted with the luxury, comfort and ease of present-day sea travel when berth-room is available for them to make use of. The interval which has elapsed since 1914 has, moreover, afforded British engineers an opportunity of introducing vast improvements in connection with marine and general engineering, with the result that Olympia will be full to overflowing with machinery and appliances of intense interest to all concerned with the shipping, ship-building and engineering industry, and the exclusion of everything of enemy origin will enable the British public to see how absolutely independent we can be of anything produced in enemy countries, at any rate as regards this particular industry. The Exhibition is to remain open for three weeks.



"Tropical Life" Friend.—No. 169.

DR. A. J. ULTEÉ.

Department of Agriculture, Java.

HAPPY the journal, or man, who can claim to have fourteen dozen friends, as the Editor of *TROPICAL LIFE* and this paper can, for Dr. Ulteé starts the fifteenth dozen, as the late Sir Alfred Jones, followed by Professor Wyndham Dunston, started the first. Meanwhile, those who are keen enough to add two and two together, will realize that this is the first number of the fifteenth year of our existence. We wish ourselves "Good Luck and Long Life."

"Our Friend" this month has been a steady reader of our views on matters tropical for twelve years or more. We renewed a previous acquaintanceship over a review of one of our books which Dr. Ulteé wrote (we believe) on our "Fermentation of Cacao." When we last heard from Java in March, the doctor was going on leave via Hong-Kong, Japan, Canada and the United States for Europe. We should envy him such a trip at any time, but doubly so just now, with men of all grades in life coming home from the war, full of ideas as to what we can look forward to that is good and what we must all strive to avoid that is bad. We hope and believe that the trip may also bring the traveller to London, possibly in time to read his own notes in our pages; if it does he will be welcomed with much pleasure on our part.

Born in 1878, Dr. Ulteé studied and obtained his degree of Doctor of Chemistry under that tower of strength in the scientific world, Professor van Romburgh, who was connected with the Department of Agriculture at Buitenzorg for many years. In 1907, "Our Friend" went out to the Tropics as Chief Chemist to the Department of Agriculture at Salatiga (Java), where he was especially engaged upon work in connection with cinchona, tobacco, cacao and rubber experiments.

"With a colleague, Dr. Maurenbrecher," he once wrote us, "I have had the good luck to win the prize offered for discovering a method, considered the most

suitable, for analysing cinchona bark," but unfortunately no details were included as to what the methods were and what improvements they called into being.

As with a good many other tropical friends, Dr. Ulteé met our Editor at the Rubber Exhibition of 1908, the first of the three held in London. What a lot has happened since; how many of the tropical scientists from the Netherlands have come and gone and made big names for themselves since then. Many of us met, for the first time, at Paris in 1905, the month before *TROPICAL LIFE* made its first bow to the public, when Dr. Greshoff, Dr. Berkhout, Dr. Soskin (from Berlin) and "ourselves" entertained Jean Vilbouchevitch to lunch at a Diner Duval between two of the meetings, and then had to go away still hungry because time ran short and our tongues ran long. Dr. Greshoff and Vilbouchevitch are, alas, no more, but we trust that the remaining two out of the five are in good health and that we may yet meet again (Dr. Soskin, like Vilbouchevitch, is a Russian, not a Berliner), and that Dr. Ulteé, Professor Went, Dr. Dekker, and a host of other Hollanders may be present as well say at the Congress next June.

The year 1912 found Dr. Ulteé installed as Director of the Besoeki Experiment Station at Djember (Java) and paying special attention to tobacco, rubber and coffee. Here, in East Java, there is no cocoa, but in the middle of the island, when at Salatiga, Dr. Ulteé told us that he took much interest in our book on "The Fermentation of Cacao," and it was then that he wrote the review on it as already mentioned.

The doctor regrets, as we do, our inability to master the Dutch language on the top of our other work. He is only too well aware of what we miss through not being able to read the publications issued by the various sections attached to the Department of Agriculture in Java. It is all the more aggravating because one can generally make out what the contents of the report, bulletin, &c., are and can fully realize how much they deserve publicity and congratulations on the results obtained after much labour and careful work. This drawback is partly overcome by the publication of an English edition of the communications or Bulletin of the International Association for encouraging Rubber Cultivation in the Netherlands' Indies, the headquarters of which are at The Hague. The contents of this publication give one a good idea of what the other bulletins contain concerning the production and preparation of tropical crops for market and so render it easy to realize all we owe to Dr. Lovink, Dr. Ulteé and the other scientists both in Java and Holland.

Talking of Dr. Lovink, "Our Friend" tells us that Mr. Mulder is now at the head of the Department of Agriculture in Java, Dr. Lovink having retired last year. Whilst there he did much excellent work. His successor is also spoken of as being a strong man.

Dr. Ulteé has, of course, written a good deal on rubber. A second edition of one of his books is already being asked for, whilst his reports on smoking rubber, on manuring the trees, and also in connection with tobacco, are freely quoted and much thought of. We have just received a note from him saying that he has arrived in Holland and hopes soon to meet us.

"TROPICAL LIFE" SUPPLEMENT

JULY, 1919.

The Production and Refining of Edible Oils

By B. P. FLOCKTON,
M.I. MECH. E.

OIL MILL ENGINEER,

MANLOVE, ALLIOTT & Co., LTD.,
NOTTINGHAM,
ENGLAND.

The Production and Refining of Edible Oils.*

UNTIL the latter part of 1914 the production of edible oils was an industry which had received very little attention from British manufacturers; the trade was practically a Continental one, more particularly confined to Holland, Germany, Austria and Belgium. At that date there were not more than three factories producing oil for edible purposes in this country, although several were treating edible oil seeds in a perfunctory manner, the oil thus obtained being used for the better quality soaps.

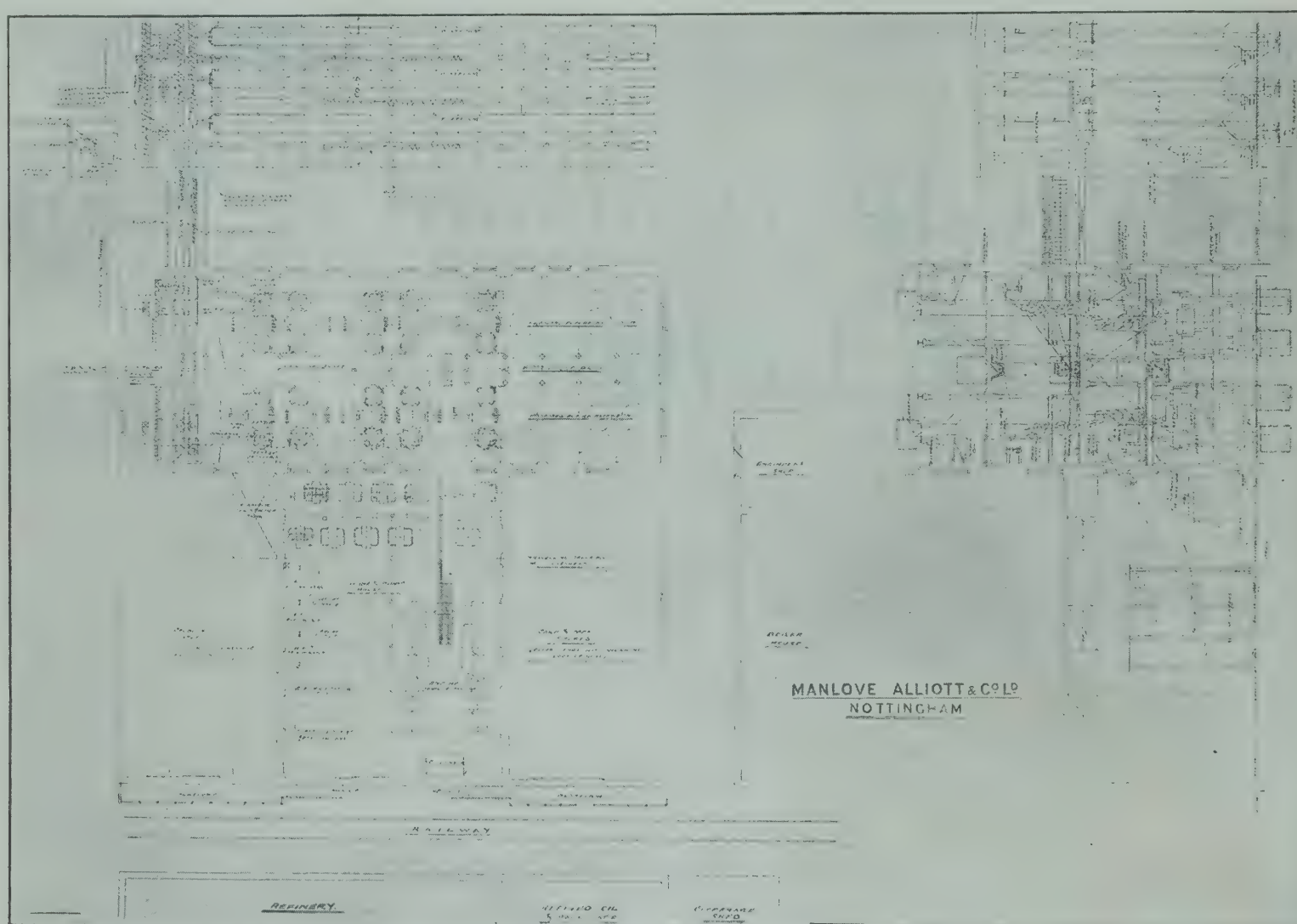
The shortage of margarine and edible fats created a demand with which British manufacturers were ill-equipped to cope, although strenuous efforts were made to make good the shortage due to the principal sources of supply being closed, but in the majority of cases the machinery available had to be adapted to meet

First quality oils are produced by submitting the various seeds and nuts to hydraulic pressure, the seed being first suitably prepared.

Whilst the by-products have a considerable value the oil is the first essential and naturally the factory must be designed with a view to obtaining the highest possible yield of oil at the lowest manufacturing cost, and consequently it is of the utmost importance that the preparatory machinery should be capable of so treating the seed as to allow of this being done.

It is therefore necessary that the seed should be thoroughly broken and rolled in order that each oil cell should be bruised and so left in such a condition as to yield its contents under pressure.

Ordinary rolling is totally inadequate, the reduction must be gradual and done in such a manner as to ensure that the resulting meal is not granular but flaked.



D. 10434.—Design of Factory for Crushing and Pressing Edible Oil Seeds.

the conditions and was quite unfitted for economical working.

At the present date many up-to-date plants are being installed, and there is no doubt that in the near future this country will be quite independent of any outside source of supply, and seeing that 90 per cent. of edible oil seeds are grown in British Dependencies there is no reason why this most important industry should not be one which, if properly controlled, should provide a field for export.

It is my intention this evening to explain in detail, so far as time allows, the necessary equipment for an up-to-date factory, together with a brief explanation of its working.

* Paper read before the Society of Chemical Industry, Manchester, on May 2nd, 1919, by Mr. B. P. Flockton, M. I. Mech. E.

A second essential is that the meal when correctly prepared should be heated to a high temperature and moistened to ensure the flow of the oil, otherwise the percentage of oil left in the meal after pressing will be found to be high even though abnormally high pressure may have been applied for an unnecessary length of time.

The slide illustrated (D. 10434) shows a factory equipped for the treatment of 1,000 tons of edible seeds per week of 120 hours with provision for an extension to 1,600 tons.

The principal oil seeds and nuts from which edible oil is produced are Palm Kernels, Ground-nuts (Arachide) and Copra, whilst an excellent oil can also be obtained from Sesame and Cotton-seed, though the latter is not recognized as edible in the ordinary sense,

inasmuch as it requires considerably more treatment than the former, and even when thus treated is not admitted to the list of first-grade oils.

The oil mill shown is built upon the banks of a river or canal, the seed arriving at the factory by steamer or barge, from which it is unloaded into silos by means of trunk elevators and conveyors.

The silo is built for a total storage of 4,000-5,000 tons, and it is therefore necessary to provide for the occasional turning over of the seed to prevent undue heating.

The seed is conveyed to the oil mill by elevators and conveyers, where it is first cleaned and passed over magnetic separators in order to remove dust and any pieces of iron which would cause damage to the machinery. From the magnetic separators the seed is raised by elevators to storage bins fixed over the reduction rolls, and which are constructed to hold eight or ten hours' supply; these bins are fitted with automatic feed device which ensures a regular and even supply of seed to the rolls.

The *reduction* of the seed varies in accordance with the class of nut or seed being treated. Copra being in pieces of considerable size requires considerably more preliminary treatment than palm kernels or ground nuts.

The mill shown being for the production of oil from copra and palm kernels is provided with two sets of rolls, each being fitted with two pairs of grooved rolls, the flutes being very deep on the first pair and becoming finer on each succeeding pair of rolls.

The broken meal is now ready for final reduction, which is done by means of five high rolls of large size which run face to face and thus subject the meal to an increasing pressure as it passes from the upper to the lower rolls until it is finally discharged to an elevator which delivers it to the heating kettle.

It will be noted that each pair of presses is provided with two kettles superimposed; the meal is delivered

meal being gradually raised to a temperature of 200°-210° Fahr.

The lower kettle is fitted with a strickling box or container which is supported upon a plate alongside the press and operated either by hand or a hydraulic ram.

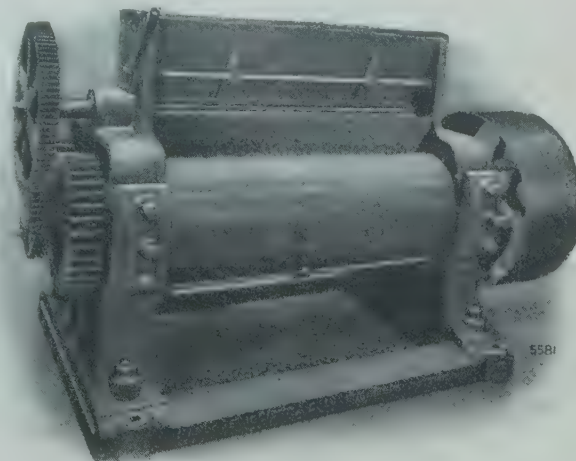


FIG. 5581.—Reduction Rolls for Ground Nuts.

The meal is placed in the press in layers, a steel plate being placed between each measure of meal and the whole mass is then subjected to hydraulic pressure equal to 3 tons per square inch on the cake. The oil flows freely and after being under pressure about half an hour the cakes are removed from the press and the operation repeated.

I now propose to explain the construction of the various machines in detail, and would draw your attention to the next slide illustrating the reduction rolls. (Fig. 5582.)

These rolls are for the first reduction of copra, and are constructed with two pairs of chilled cast-iron rolls, each pair being independently driven.

In the reduction of copra it is essential that it should not be simply broken but rather torn apart, and for this purpose the rolls run at different speeds.

Ground nuts on the contrary *must* be broken, and being of a much softer nature than copra one pair of rolls only are required (fig. 5581), and these run at equal speeds.

Palm kernels are often broken and reduced by triple rolls (fig. 7323), which are a combination of both methods. The kernels are particularly hard and consequently the two upper pairs of rolls are constructed to run at varying speeds in order that the kernels may first be broken and afterwards rolled by the bottom pair of rolls, which run at equal speeds.

The final reduction rolls (fig. 7338) are of the Anglo-American type, but specially designed for the treatment of seeds containing a high percentage of oil. The rolls are of chilled cast iron, 24 in. diameter, and are ground dead true; the three upper rolls are grooved, not for the purpose of cutting, but to ensure an even flow of meal, which by this time is so fine as to necessitate very careful treatment, otherwise a certain amount of oil may be expressed rendering the meal sticky and difficult to induce to flow evenly through the rolls.

For this purpose special provision is made whereby each roll may be so adjusted as to ensure no more than the correct pressure being applied.

It will be noticed that these rolls are driven at both ends, this is to ensure steadiness and avoid any

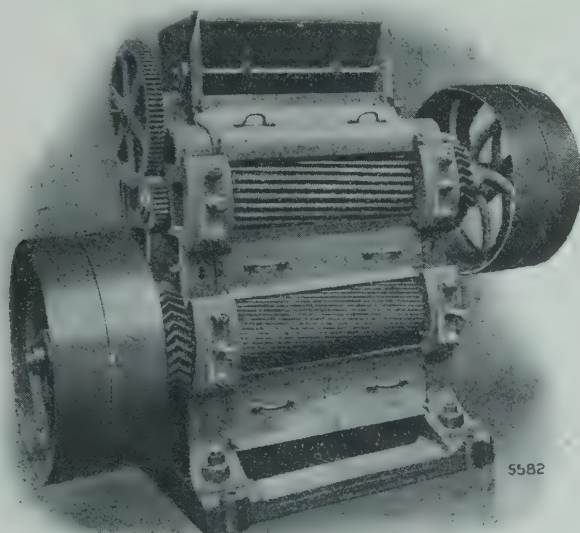


FIG. 5582.—Preliminary Reduction Rolls for Copra.

into the upper kettle and when desired is automatically passed to the lower one through an opening controlled by a slide.

During its passage the meal is gradually heated, and in the lower kettle saturated steam is added and diffused evenly throughout the entire contents, the

tendency to slip. There are also two rolls which are friction driven, and these are so adjusted as to give just the degree of slip necessary to reduce the meal to a fine flake.

made whereby one half of the side frame can be removed, allowing the rolls to be withdrawn without the necessity of lifting them over the top of the frames, which is the usual method with the Anglo-American

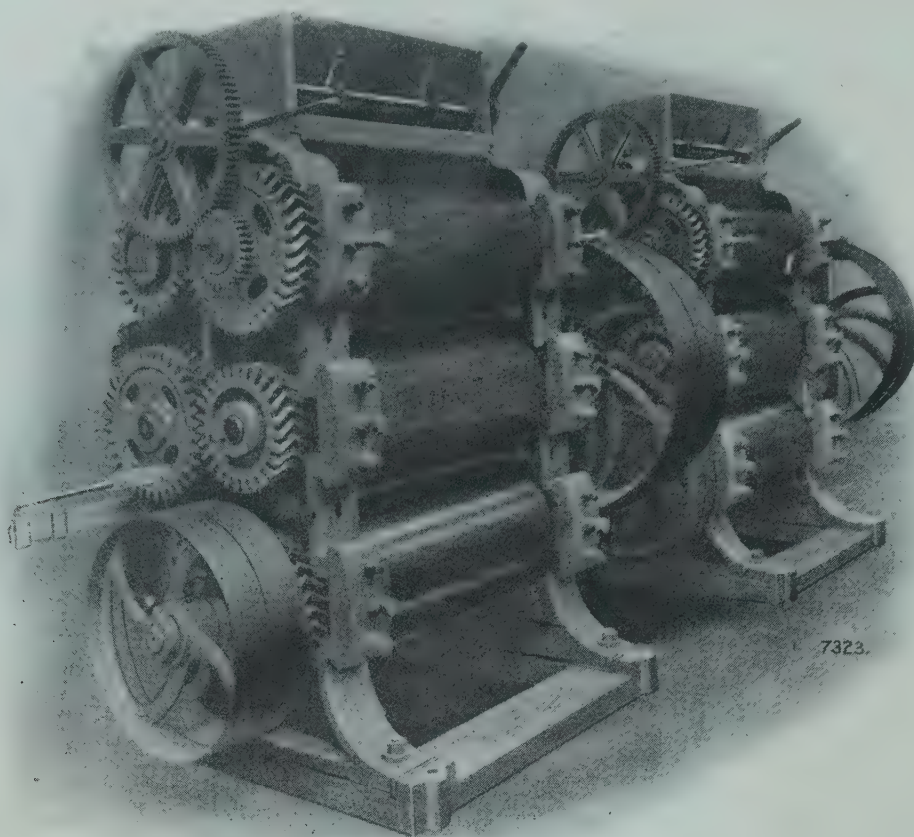


FIG. 7323.—Reduction Rolls for Palm Kernels.

With rolls of this type provision must be made for re-grinding, as it is essential for good work that they shall always be dead true; the weight being considerable, and the height necessarily great, provision is

type of rolls. Special provision has also been made whereby the bearings, which are of the self-oiling type, may be withdrawn without dismantling the rolls.

It is also desirable that the feeding of the rolls

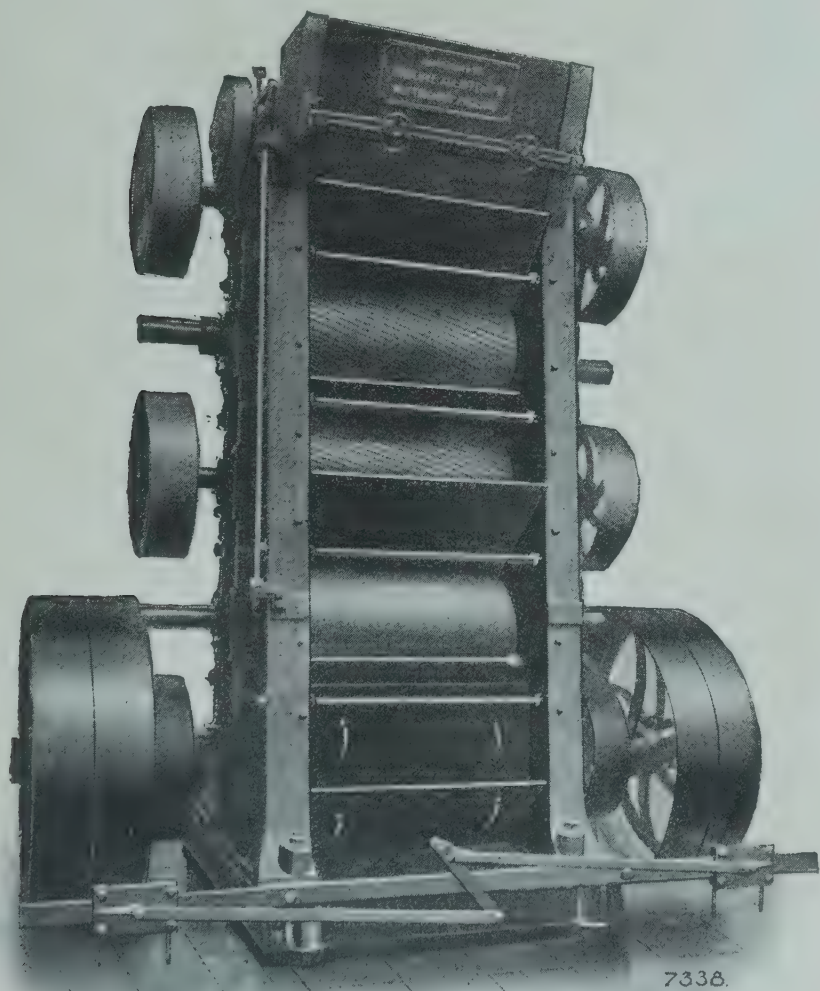
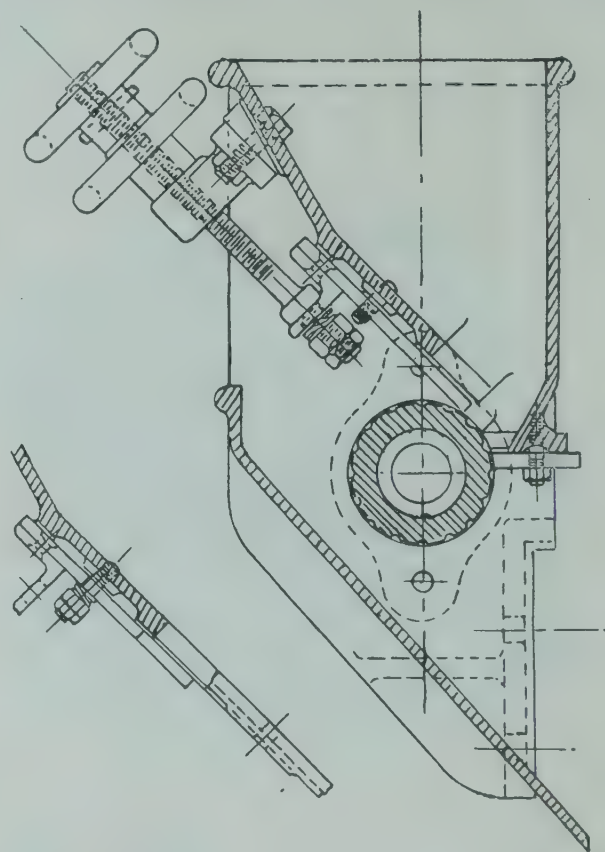


FIG 7338.—Final Reduction Rolls.



Sketch.—Patent Automatic "Visible Feed" Hopper.

should be absolutely even and regular, and this necessity has of late been receiving considerable attention from engineers.

The slide illustrated shows an improved method, for which a patent has been applied, which fulfils the requirements.

It will be noticed that the feed hopper is divided into two sections, the upper one of which receives the broken seed, from which it passes on to a feed roll revolving in a direction opposite to the course which would be followed were the feed dependent upon gravity.

The adjusting slide is so constructed as to allow variation, not only as regards the thickness of the feed, but so as to permit of the seed being fed in greater volume to one side than the other, which allows compensation for any wear in the surface of the crushing rolls and ensures an absolutely evenly rolled meal.

The opening between the upper and lower portion of the feed hopper permits of the feed at all times being visible.

The heating kettle or cooker (fig. 5622), as will be noticed from the slide illustrated, consists of two steam-jacketed vessels superimposed, each of which

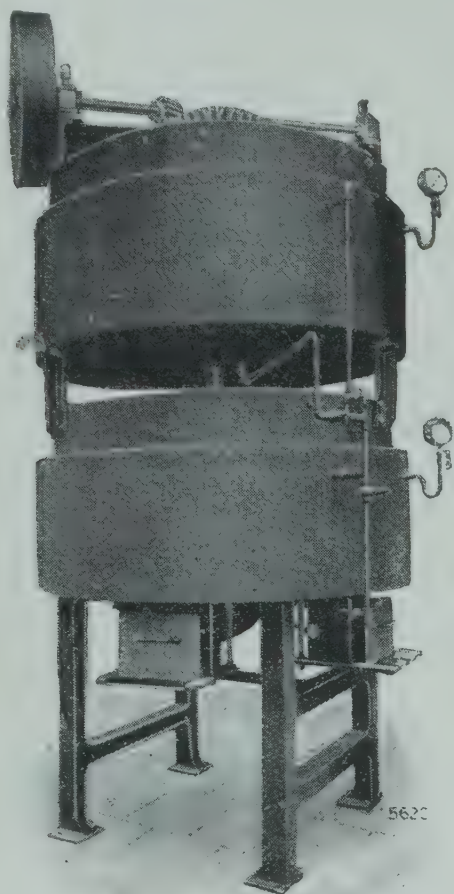


FIG. 5622.—Double Heating Kettle.

is fitted with agitating gear to prevent the meal adhering to the sides or bottom, in which case the meal would be burnt with consequent discoloration of the oil, and also to discharge the meal through the delivery mouthpiece when required.

Certain seeds contain a considerable amount of moisture in addition to the oil, and in order to obtain the best possible yield of oil it is advisable that this excess of moisture should be first removed so far as possible. This statement may possibly be criticized by many seed crushers, but my experience shows that if the inherent moisture is first removed, and surface moisture thereafter added, the results are thereby much improved.

The upper kettle receives the cold meal from the crushing rolls and retains it whilst the lower kettle is being emptied, and during this time it is possible to drive off any excess of moisture.

After delivery to the lower kettle the meal may be

moistened by the addition of saturated steam, preferably at a low pressure, and by means of a steam stirrer which ensures thorough and equal diffusion of the moisture thus added.

The hydraulic press is constructed upon the cage or stave system (fig. 5578).

This press is constructed with a ram $18\frac{1}{2}$ in. diameter for a working pressure of 3 tons per square inch, equal to a gross pressure of 806 tons.

As will be seen, the upper part of the cage, which contains the meal whilst under pressure, extends above the working floor and the top is level with the plate carrying the strickling box, which is used to convey the meal from the kettle to the pressing cage.

Suspended from the press head is a sliding head or ram which is withdrawn during the filling or emptying of the cage, whilst fixed in the press head is an inverted cylinder fitted with a hydraulic ram operated by a foot valve.

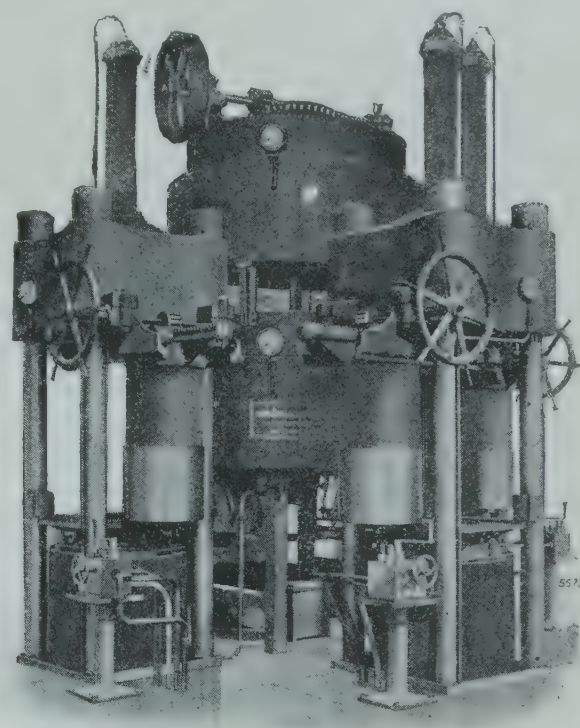


FIG. 5578.—Cage Press System.



FIG. 5579.—Pressing Cage (covers removed).

The Pressing Cage (fig. 5579) is constructed of a number of special steel bars accurately machined and fixed on end, being supported by a solid steel casting at their upper and lower ends, and strengthened by a number of weldless steel rings suitably spaced to withstand the pressure.

The meal is measured into the pressing cage from the strickling box in sufficient quantity to form one cake, and a tinned or galvanized steel plate inserted after each measure of meal. The tinning of the plate prevents the adhering of the meal.

During the process of filling the press cage the ram, which has previously been raised to the level of the top of the cage, is gradually lowered.

The pressing cage now being filled, hydraulic pressure is admitted to the cylinder in the press head (fig. 5578), the ram therein being used for the purpose of packing the cakes and permitting additional meal to be added to that already contained in the pressing cage.

Upon the completion of this operation the sliding head is placed in position over the top of the pressing cage, and hydraulic pressure admitted to the main cylinder—low pressure is first admitted, generally about 1,000 lb. per square inch, followed by an intermediate pressure of 2 tons per square inch, and after a short time the extreme high pressure of 3 tons per square inch is applied. The pressure being applied thus gradually, and care should be taken that at no time should the pressure drop, the flow of oil is even and continuous.

During the time the meal is under pressure there is considerable side friction on the cage, due to the expansion of the meal, and this friction is sufficiently great to lift the pressing cage, the sliding head then entering the cage and equalizing the pressure throughout the entire mass of meal or cakes.

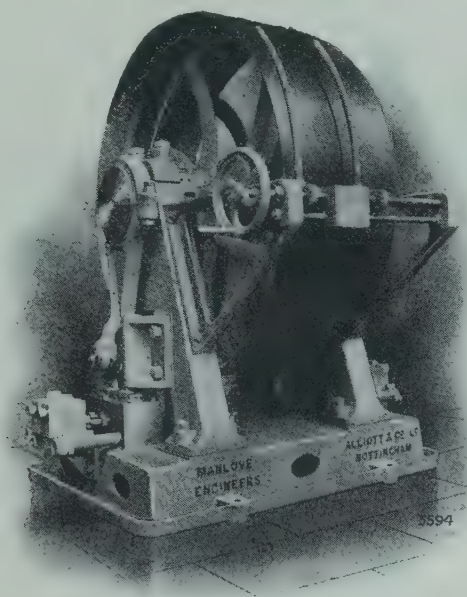


FIG. 5594.—Hydraulic Press Pumps.

The construction of the cage (fig. 5579) has a very considerable effect upon the result obtained. It is essential that the steel bars of which it is formed should be accurately spaced and thoroughly rigid. The spaces between the bars are usually about 5/1000ths of an inch, this distance being varied to suit the material treated. They are very accurately machined in order to allow of each bar being adequately supported, and in a cage correctly designed and constructed there is absolutely no escape of meal through the bars, whilst the oil can exude freely.

Upon the completion of the pressing the cakes are expelled from the cage by means of the main ram, the cage meanwhile being firmly held down by means of the sliding head, which upon withdrawal to the unloading position engages one side of the pressing cage, the other side being similarly held by means of clips attached to the press columns and operated automatically by the sliding head.

Each press has an approximate capacity of 10 cwts. of meal per hour, the oil left in the cakes varying from

4 to 6 per cent., dependent upon the length of time pressure has been applied.

The hydraulic plant usually employed in an oil mill of this description consists of belt-driven pumps and high, intermediate, and low pressure accumulators.

The pumps are designed to allow of continuous running, any repairs necessary being possible without stopping the factory.

The type illustrated (fig. 5594) are so arranged as to allow of the suction valves or delivery valves being exchanged in a few minutes.

The delivery valves are quite separate from the pump barrels, whilst both delivery and suction valves, being of the ball type, never require re-grinding, also the seats being renewable they can be withdrawn and replaced by new ones should the wear be excessive.

With three stages of hydraulic power, three accumulators are usually provided, each fitted with an automatic controlling gear to relieve the pumps when the accumulator reaches the top of its stroke and which restart the pumps when the demands of the presses cause the accumulator to fall to a predetermined position.

Photo 3974 illustrates a relief valve and automatic control gear of this type.

The accumulator in its rise comes in contact with the horizontal lever of the control gear, which is raised and held in position by the cranked lever which is forced forward by a spring. The rising of the horizontal lever operates the slide valve on the side of the relief valve, and this admits pressure under a lifting ram which raises the weighted lever, thus lifting the relief valve to which it is attached.

The special advantage of a valve of this type is that the relief valve is lifted clean off its seat, allowing a full bore exhaust for the pumps and thus avoiding undue wear of the valve seat.

The accumulator in its fall comes in contact with the cranked lever, which is forced back to its original position, and thus allows of the slide valve moving to the exhaust position and the lever lowering, which in turn closes the relief valve and re-starts the pumps.

Refining.

Crude edible oils contain two germs of rancidity, viz., free fatty acids and volatile fatty acids. It is therefore necessary to treat the oils in two stages, and in designing or arranging a factory for this purpose this must be borne in mind.

The design (drawing 10493) illustrates the arrangement of a modern factory for the production of edible oil from crude palm kernel, ground-nut, or coco-nut oils, having a capacity of 60 tons of oil per week, with provision for the extension of the plant to allow for the production of a further 60 tons per week at a later date.



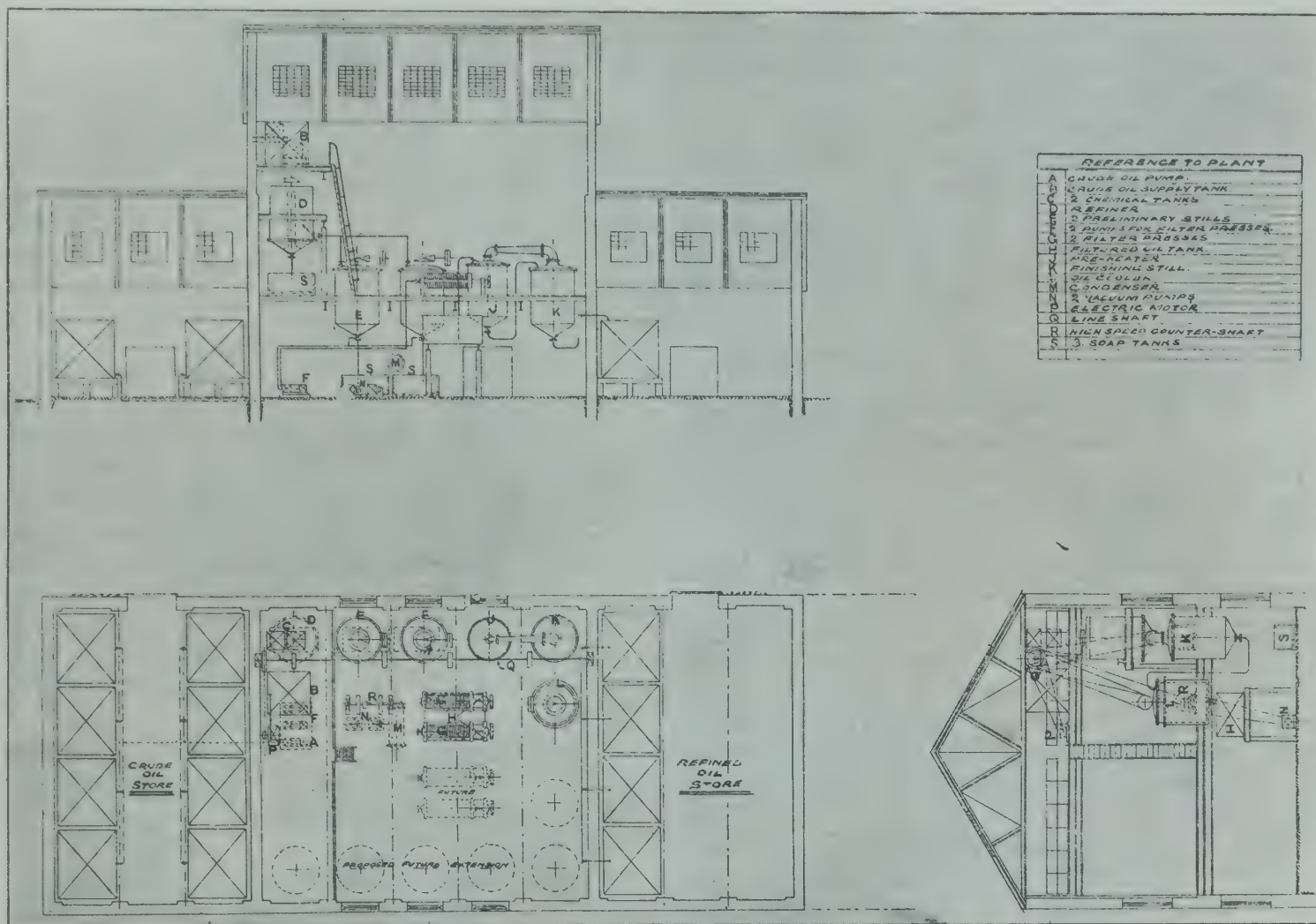
FIG. 3974.—Hydraulic Relief Valves and Control Gear.

The plant consists of a neutralizing or refining vessel (D), together with the necessary chemical tanks (C), preliminary still (E) for washing or bleaching the oil, preheater vessel (U) for the purpose of utilizing the waste heat for preheating the oil prior to neutralization, deodorizer (K) for the removal of the last trace of odour, together with the necessary filter presses, soap stock tanks, vacuum pumps and circulating pumps.

The various processes adopted by refiners have always been most carefully guarded and looked upon as trade secrets, and although the firm manufacturing the plant usually supply details of a process whereby a first-class edible oil can be produced, it is very rare indeed that once the refinery is handed over and regularly at work the engineers are allowed free

Meanwhile the chemist prepares the chemical in the tank provided for this purpose, from which the exact quantity required for the purpose of neutralizing the free fatty acids contained in the batch of oil is drawn into the second chemical tank, which is fixed immediately over the neutralizing vessel.

The chemical usually employed is caustic soda or soda carbonate, the latter being preferred by many refiners owing to the lesser risk of the formation of soap and consequent waste, whilst the former is often used, having been found to act more quickly and with better effect in certain grades of oils. The chemical is heated to a slightly higher temperature than the oil, and it is added whilst the latter is in a violent state of agitation. The agitation is continued for a period of about ten minutes, after which the chemical



D. 10493.—Edible Oil Refinery.

access, owing to various modifications and alleged improvements having been introduced by the chemist in charge of the plant.

I trust, therefore, that I may be excused if in describing the apparatus briefly I refrain from more than a general indication of the process itself.

Assuming that the crude oil has been filtered in the crushing mill and delivered into the receiving tanks, a test must be made to determine the percentage of fatty acids contained, after which the first portion of the process may be proceeded with.

This consists of the removal of the free fatty acids.

The oil is pumped or otherwise delivered into the neutralizing vessel or refiner, which is constructed with either a steam jacket or steam coil for the purpose of raising the oil to a temperature of about 120° Fahr.

is found to have combined with the free fatty acids and formed a flocculent soap.

A test is taken at this stage in order to ascertain whether the acids have been eliminated, and, if the previous calculation has been worked out correctly, the oil should prove neutral. If it is found by the second test that the oil is not neutral an additional supply of chemical is added during a second period of agitation.

After the agitation of the oil is concluded the temperature of the oil is increased to about 180° Fahr., when it is allowed to stand for the purpose of separation for several hours.

The clear oil is syphoned off, or pumped, into the preliminary still for further treatment, the residue being finally discharged into the soap tanks.

This residue may either be sold to soap manu-

facturers as soap stock, or it may be treated with acid for the recovery of the free fatty acids which are used for various purposes.

During the process of neutralization it will be found that the colour of the oil has perceptibly improved, but to produce a perfectly colourless oil it is necessary to employ a bleaching agent, generally fullers' earth, or Kieselguhr.

In the preliminary still, which is constructed to work under vacuum, the oil is washed and bleached; the former operation removes the last trace of soap and chemical, and the latter completes the removal of the discoloration.

This apparatus is constructed with an agitating device, but in this vessel the agitation is not required to be so violent as is the case in the neutralizer.

Many refiners dispense with the washing of the oil, in which case the preliminary still is not necessary, the oil being treated with the bleaching reagent in a subsequent operation.

If the oil is washed it is boiled, under vacuum, with half its own weight of boiling water for about twenty minutes, after which it is allowed to settle, when, if everything is in order, the oil should be clear; if not, then the first washing water is removed, and a second supply of hot water is added and the oil again boiled.

With an experienced refiner this second boiling is very rarely necessary.

If the oil is to be bleached it is first cooled, and the bleaching agent afterwards added and thoroughly agitated to ensure a perfect admixture with the oil, after which the mixture is filtered for the purpose of removing the reagent from the oil.

This completes the removal of the free fatty acids, leaving the volatile acids to be eliminated.

The oil is syphoned or pumped into the finishing still or deodorizing vessel, which is constructed to work under vacuum, and fitted with a steam coil or steam jacket for the purpose of maintaining the oil at a temperature of 120-130° Fahr. In this vessel it is treated with superheated steam at a temperature of 180-220° Cent.

The expansion of the superheated steam in a vessel *in vacuo* creates tremendous agitation, which ensures the slightest trace of odour being carried off by the vapour which is condensed, and if a surface condenser

is employed the volatile oil may be recovered and sold to the soap manufacturer. As the percentage of volatile oil recovered very rarely exceeds 25 per cent., many refiners do not trouble about this, using either a jet condenser or a simple coil in a tank of cold water.

It is essential during the process of deodorization that the vacuum on the vessel should never fall below 26 in., otherwise there is likely to be some condensation of the steam in the oil. Should this happen the temperature of the oil will at once rise, with a consequent risk of discoloration, which risk is further increased by the necessity of drying the oil. The length of time required for deodorization depends upon the quality of the oil, and it is therefore necessary to continue the treatment until such time as a test shows that the oil is perfectly tasteless and colourless.

As all edible oils when at a temperature above melting point are likely to absorb impurities from the air, it is necessary to maintain a vacuum on all the vessels used subsequent to the neutralization of the oil, and for this reason it is advisable that before contact with the atmosphere the oil should be artificially cooled.

A vessel with a water jacket and mechanical agitator is therefore usually provided in every up-to-date factory, which vessel is connected to the vacuum pumps, for the cooling of the oil.

This completes the refining process, the oil being drawn directly from the oil cooler into barrels or drums, when it is ready for distributing to the various factories making use of the commodity.

The time taken varies from six to eight hours for a batch of oil, but where a preheater is provided the process is practically continuous, as considerable time is saved owing to the waste heat from the deodorizing vessel being used to raise the temperature of the neutral oil to a temperature practically equal to the requirements of the deodorizing process prior to the oil being delivered to that vessel.

The losses in refining are variously estimated, but it is usually found that the reduction in bulk is about double the percentage of fatty acids.

The cost per ton varies in various districts, but an all-round figure of £5 to £6 per ton should cover all overhead and manufacturing costs.

At our request, and in order to avoid waste of time to our readers through having to write to us on the subject, Mr. Flockton (c/o Messrs. Manlove, Alliott & Co., Ltd., Nottingham) has very kindly offered to answer any reasonable queries that may arise in studying this paper and to give fuller particulars when necessary.

Business Notices.

1.—The address of TROPICAL LIFE is Messrs. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

JULY, 1919.

How to Increase the Demand for Raw Rubber.

To the Editor of TROPICAL LIFE.

SIR,—As you run on broader lines than most of the world's rubber men and seem to have no axe of your own to grind, I am inflicting you with this effusion instead of sending it direct to the Rubber Growers' Association in the hopes that, whether you agree with my views or not you will be good enough to publish them.

I hear rumours that the R.G.A. are offering money prizes, £500 or £5,000 to the man who can develop the biggest demand from hitherto unknown quarters for their rubber. These prizes seem very slow in drawing forth competitors much less probable winners, and I would suggest that the reason of this is, that the award is either too heavy, or not nearly heavy enough. Let me explain what I mean.

Whilst most men are ready to receive even £500 when it is handed to them; many men in business like to earn the money they are to receive or else leave it

alone. If, on the other hand, the returns they can give for the payment to be made far exceeds the value of those payments, the same men, honest on both sides of the fence, might justly refrain from developing their scheme for using up another twenty, fifty, or a hundred thousand tons of rubber unless they were paid, at least for a term of three or five years, a percentage on the value of, or a royalty on the tonnage of the increased output of rubber required and used.

If instead of offering a fixed sum, the R.G.A. offered to pay ten shillings or twenty shillings per ton, on the increased quantity of rubber proved by an impartial committee, to have been rendered necessary by the development of some hitherto dormant or altogether undreamed of use of rubber, then and not until then, will the class of men, hard-headed, strenuous, widely experienced men, who are alone likely to ferret out such a demand, be willing to make experiments and give themselves up to dreaming in order to compete for the prize of £20,000 to £100,000 that could be theirs if they were lucky enough to earn it. A levy on the rubber used, of 20s. or 10s. per ton would harm no one. It could be agreed to at the start between the buyers, whose hitherto dormant trade will be called into being, and sellers who would benefit on every ton of rubber they put out and not only on that required by the new and hitherto unthought of demand. Everyone would be happy. No one would feel the cost of the prize and true genius for once would reap an adequate reward.

Yours very truly,

A. TREW-GENIUS.

London,
July 5th, 1919.

The New President of Brazil.

WRITING on the election of Senhor Epitacio Pessoa to the Presidency of Brazil, *Wileman's Brazilian Review* of June 4th told its readers that "so long as the question of electing a successor to the late Dr. Rodrigues Alves was unsettled, we refrained from a discussion of the merits of the respective candidates, as much from a sense of gratitude for the uncompromising support of the Allied Cause by Dr. Ruy Barbosa throughout the war as from that of the unseemliness of foreign criticism of a purely domestic crisis.

"Now it is all over, and Dr. Ruy Barbosa himself accepts the decision of the urns, we may be permitted to voice the opinion of the majority of our own countrymen, that the solution reached by the directors of the dominant party in this country could not be easily improved upon.

"Objection on the part of the Services to the candidature of Dr. Ruy Barbosa may have been an element, but certainly not the only or even the leading motive for the choice of Dr. Epitacio Pessoa which, first and foremost, obeyed the necessity of conciliating the pretensions of rival candidates even more than distrust of Dr. Ruy Barbosa's somewhat dictatorial and overbearing ways.

"As things turned out, even the 'lavish military and naval expenditure' that *The Economist* of London objects to, and which characterized the last three

Brazilian administrations, may seem not unjustifiable in view of the eminent services the Brazilian fleet was, in consequence, in a position to lend to the Allied cause by co-operating in the patrol of the South Atlantic and in the Mediterranean.

"Though, of course, every mickle makes a muckle, it was not to naval and military expenditure alone that the disaster of 1914 should be attributed, but to extravagant outlay likewise on every kind of public works, born of the ingrained optimism that contemplation of limitless perspectives impressed on Brazilian thought and action.

"Besides, Dr. Epitacio Pessoa is, as the *Economist* itself points out, an eminent jurist and was, moreover, a prominent member of the Government of Campos Salles, certainly the most conservative of all Republican administrations in this country.

"It was under this administration that expenditure was ruthlessly cut down, paper money called in and the credit of the country abroad was redeemed in less than three years, as, doubtless, Dr. Epitacio Pessoa would again be prepared to do should a similar necessity arise.

"In consequence of the war, the country has for five years been thrown entirely on its own resources, and some appeal to foreign credit is inevitable, if the development is to be taken up at the point at which the outbreak of war left it.

"Whatever the foreign debt may amount to, the capital requisite for productive purposes will be forthcoming from either European or American sources, and the best guarantee that it will be practically applied lies in the presence of a man of Dr. Epitacio Pessoa's antecedents and character at the head of affairs.

"Backed by a powerful and well-organized party, the profound experience of men and affairs which the new President has gained as President of the Brazilian Peace Delegation, will give his administration over here a prestige such as no other, not even that of Campos Salles enjoyed, and free it from any necessity of pandering to the petty political intrigues that characterized those of too many of his predecessors."

The next London Rubber and Tropical Products Exhibition and Congress.

TO BE HELD IN JUNE, 1920.

HEARING that it was proposed to hold another Rubber and other Tropical Products Exhibition "as soon as possible," we wrote to Miss Fulton and asked for news. This we received in due course, and have now much pleasure in passing it on for the benefit of our readers. Immediate attention is necessary, for in these days of restriction of effort on this side, and delays in the journey across, a year is a somewhat short period in which to do all that is necessary to make the exhibition the success that we feel sure it will be; to make it, in fact, fully worthy of its predecessors, plus something extra so as to include all the new uses for rubber that have been called into being through its utilization in flying and for other purposes in connection with the war.

Summing up, we can state that the exhibition will be held on June 3rd-17th, 1920, at the Royal Agricul-

tural Hall as before. Mr. H. Greville Montgomery, J.P., ex-M.P. for the Bridgwater division of Somerset, will take the place of the late Mr. Staines Manders, whom Mr. Montgomery will be the first to own we shall all miss when it comes to superintending the work. Fortunately we have Miss Fulton still with us to help, and Miss Edith A. Browne has already started to render the great assistance as the Overseas representative, which, as is well known to most people, she gave on previous occasions. The offices at present are at 43, Essex Sreet, Strand, W.C.

All the old connections and machinery for getting into touch with former exhibitors and supporters are intact, and will be utilized again, so that now the start has been made progress will be rapid. Mr. Montgomery is, we believe, *persona grata* in useful semi-official circles, and is already well advanced with the preliminary arrangements. About next June we shall begin to know definitely how we stand with Germany and its attitude towards the rest of the world. June next year, therefore, offers, to our mind, a far more suitable time to celebrate Peace and our victory over Prussian militarism than anything we may do this year. We shall feel, therefore, that the coming show will truly be a Peace Exhibition, at which reconstruction will play a prominent part, and the commercial interests of this country and her Allies be advanced in every way.

As on previous occasions, the Congress to be held will be almost, if not quite, as important to our commercial expansion as the exhibition itself. Of course the last word on Rubber will be placed on record, and also, we trust, on the standardization of other leading tropical crops as well, especially of vegetable oils for margarine and soap, as well as of cacao, fibres, &c. Much has happened since 1914; a good deal is sure to happen between now and next June. Both in connection with the Exhibition, therefore, as well as with the Congress, we look forward to having a busy time, and one fraught with great possibilities for consolidating and extending our grip on the Tropics.

Later on we hope to give a preliminary list of the names of those willing to act as chairman of the various committees, especially the reception and hospitality one. It is to be hoped that the leading experts with wide experience of the Tropics, their people and products, can be induced to work with those whose help made the last Congress so marked a success. The veterans of 1914 can, and we feel sure will, do much to help in this one. Sir George Watt, formerly Adviser to the Government of India, has been paying special attention to the curing of cacao; we hope he will have something to tell us on such work. Lord Leverhulme in the Vegetable Oil section would prove a tower of strength both in technical as well as in commercial matters, or with regard to labour, output, &c. Rubber, cacao, vegetable oils, cotton and sugar all need much attention both on the technical as well as on the productive side, whilst last, but not least, the question of agricultural colleges and scientific research must not be forgotten if we are to make the most of this excellent opportunity to advance the prosperity of our tropical possessions and develop their industries to help pay for the war and bring prosperity and happiness both to our Allies and ourselves.

The Woman's Part in Tropical Development.

WE are glad to see I. A. Wright's (Miss Irene A. Wright) name attached to the first of a series of articles in the *Louisiana Planter* of June 28th, under the heading of "The History of the Cane Sugar Industry in the West Indies." Miss Wright has made a special study of Spanish colonial history, and is now in Spain diving into the archives of that wonderful country, determined to find out the last word of the earlier history of the Spanish domination of the Tropics and all that it has done, for and against, the output of economic products from the torrid zone. The present article in the *Louisiana Planter* has been based, it seems, on this work, for we are told in the sub-heading that the information given has been obtained from documents existing in the Archives of the Indies, at Seville. We are glad to think that the Tropics, and especially the West Indies, are still to have the advantage of Miss Wright's knowledge and experience, for when she left Cuba we were afraid these would have been lost to us, but this, it now seems, will not be the case.

I believe Miss Edith A. Browne (who is off to West Africa to make a special feature of the colonies there in next year's Exhibition and Congress), Miss L. E. Elliott, and Miss Wright met each other either in Cuba, up the Magdalena, or elsewhere in the Tropics; in any case, whilst men are satisfied to wear out their clothes at the office desk or on the tail-board of 'buses, these three intrepid women, with their intimate knowledge of the Tropics and their resources and their widespread ideas of Empire and all it means to modern life, are out and about in the world to pick up information, and supply it to the *Times* and other leading papers both here and abroad. We wish them all success on their patriotic enterprise, and can only regret that, whilst they are doing such necessary work, the men are so slow at following their example, preferring to remain at home and take things easy.

FOLLOWING on the great reputation they achieved for reliability in the world war, B.S.A. motor bicycles scored a fine success in the Victory Trial recently organized by the Birmingham M.C.C. Despite a difficult course of 125 miles, including six test hills, the eight entrants riding B.S.A. machines completed the distance, and by their fine performance obtained eight awards, viz., four gold and four silver medals. Further successes have also been won by B.S.A. motor bicycles in Denmark. In the Copenhagen M.C.C. 400 miles race first and second places were secured by B.S.A. motor bicycles. These machines were the only competitors (motor cycle or car) to complete the race within the record time.

IN spite of the Peace Celebrations on July 19th, public cocoa sales were held on July 22nd, when fine Grenadas sold at 126s. both for home use and export, and Trinidads at the same rate. Some very fine, bold Nicaraguan Ceylon realized 193s. The stock of cocoa in London on July 19th was 116,188 bags, against 126,647 a year ago.

The World and its Food Supplies.—Part XII.

SOYA BEANS (*Glycine hispida* Mönch, or *Dolichos soja* L.)

(Continued from the March issue, p. 38.)

"RATHER more than a year ago," said the *Madras Mail* on July 20th, 1911, "the Annual Report of the Chinese Customs on the foreign trade of 1909 showed that, at a bound, the soya bean had taken a position equal to that of tea in the list of China's exports and, with the addition of bean-cake, even challenged silk at the top of her list.

"The figures given of the exports of this wonderful bean from Manchuria justify the claim made that the rise of the soya bean industry is one of the romances of modern commerce. Up to 1907 the annual exports of these beans from Manchuria did not exceed 120,000 tons. In 1908 they amounted to 330,000 tons, and, in the following year, they ranged between 700,000 and 800,000 tons, while, from the report of the British Consul at Newchang for 1909, we gather that the export of the bean in all its forms amounted to no less than 1,300,000 tons.

"The benefit that this industry has conferred upon Manchuria is shown by the unprecedented rise in the purchasing power of the people. Before the discovery by the West—England chiefly—of the value of the soya bean, the average annual trade returns of Newchang only amounted to 33,000,000 tael (tael = 3s.), of which imports were represented by 12,000,000 taels. In 1909 the value of the trade was 142,000,000 taels, of which 50,000,000 taels represented imports into Newchang. In linseed India possesses the one great rival to the soya bean as an oil-seed crop. That is no reason, however, why, if the conditions are suitable, India should not compete with Far Eastern Asia on its own ground."

According to Mr. David Hooper, our Madras contemporary further remarks, who published an account of the soya bean in India, which was included in the Agricultural Ledger Series, the soya bean must have been known to and grown by some of the people of India since quite remote times. It is difficult to fix the date of its introduction, but it has been known there for a long time, chiefly among the Mongoloid people dwelling on the Burmese and Himalayan frontiers, so that it is probable that the bean, like its cultivators, had journeyed down in the first place from the north of Asia. As early as 1864 soya beans were identified among the products sent in from some of the Hill States to be included amongst the articles shown at the Punjab Exhibition held in that year.

Since this is so, not only India, but other centres within the Empire, will be wise to study the bean at home in Manchuria and also in the United States, see why it is that the crop has done so well there, especially in Manchuria, and then compare notes with their own surroundings, soil, &c., and thus judge whether they also cannot cultivate this crop to advantage. We suggest this not with the idea of entering into competition with the gigantic trade of Northern China, but owing to the fact that the beans and their cultivation are useful for so many purposes

wherever grown. To rely on Manchuria, however, for supplies, especially in the near future, when the supply of tonnage will be so far behind the demand, would mean a heavily increased cost for transport (if there are the means to transport it) which could well be saved by cultivating the bean locally, especially, as is well known, doing so benefits the soil so enormously.

It is on account of the plant's great value, both as a food, as a raw material in several trades, and also as a green manure that Mr. de Sornay paid such careful attention to this section of his book. Pressure on his space, however, compelled him to desist from going into the matter as fully as he could have done, no matter how anxious he might have been to deal with the subject exhaustively; to do so, however, would need a book by itself.

In this section we will conclude with the following further extract from the *Madras Mail*, and then in the next issue discuss the reasons why Manchuria does so well with her bean crops, how her farmers have, in their ignorance, prevented the plants from benefiting the soil, and yet how and why, when left to Nature, the plant does fertilize the soil with nitrogen so generously.

"Mr. Hooper," concludes the *Madras Mail*, "gives a catalogue of the various uses to which this vegetable can be put; and the following extract from a China contemporary gives the list more picturesquely:—

"Soy or bean sauce, from which the name *Soya* is derived; *chiaug*, the common diet of agricultural labourers; *toufu*, or bean-cured; bean refuse as a fertilizer or for the fattening of hogs; bean-oil as an illuminant, still preferred by thrifty Chinese to kerosene as requiring no special lamp, and bean-cake, again for fertilizing and for the feeding of stock—all these are traditional and familiar. To some readers the use of bean-oil for waterproofing umbrellas, and, when mixed with lacquer, for manufacturing varnish and printing ink, will be news. But yet further uses have been discovered for the bean in Europe. German millers experiment with it for the making of brown bread; English manufacturers produce excellent bean biscuits. It is sought for by makers of margarine, soap, candles, and, if we recollect rightly, for cheese; and French culinary ingenuity has even, according to reports received, employed the bean as a substitute for coffee beans."

"In this list no mention is made of the value of the plant itself as a green manure. Being of the leguminous order, it follows that it must enrich the soil in its available nitrogen content. It is curious, Mr. Hooper points out, that when first introduced into the United States the bean did not form the root tubercles that are evidence of the nitrification of the soil; but the inoculation of soil with the necessary bacteria soon cured this. The soya bean is used in Japan as a soil renewer, and is cultivated in rotation with other crops; and a most economical way of growing the bean is adopted also in Japan of sowing it between rows of maize. Two crops are thus secured at the same time, while the soil is improved by an increase of nitrogen."

The current issue of the *Tropical Agriculturist of Ceylon* also contains much interesting matter

regarding the soya bean. As a soil fertilizer it is extensively used in Queensland, where, as a rotation crop, the soya bean is grown between two wheat or oat crops. As a fodder plant numerous experiments have been tried which prove that the soya bean as an ingredient in cattle food has given undeniably good results in keeping in good condition dairy cattle, and fattening sheep and hogs.

(To be continued.)

Trade, Politics, and Finance.

THE true Stock Exchange man is an incorrigible optimist. Artists, actors and scribblers tend to become either grizzlers or philosophers when badly down in their luck, but not so the born speculator of the Stock Exchange. Even when under the steam-roller of the broken-up markets of the past five years he has still maintained his optimism and belief in a good time to come. That is the Stock Exchange speculator pure and unadulterated; nothing can kill his vitality.

This being so we are not surprised to see the writer of *Topical City Gossip* in the current number of *The Empire* say that the city has a strong conviction that we are now witnessing the dawn of a prosperity without parallel in the history of the country, and that experts estimate new issues aggregating a thousand millions or more will follow the practical working (not the official acceptance) of the Peace Treaty. On the face of this the "Oof Bird" is ordering suits at £13 13s. and upwards and over twenty guineas, so he says, for his dress clothes and is talking glibly again of the coming glories of the "Thieves' Kitchen" by day, and of dinners, dances, &c., by night. It is a "frothy" world all said and done.

Meanwhile those who take the glories of Peace more seriously are content to look on and think. They also dine at the Savoy, the Carlton, or their pet place in Bohemia, or will look in at the Café Royal to see the fun, but still keep aloof of it. What one sees there acts as the pulse of the financial and commercial life of the country, because, when confidence runs rampant in its play, the keen man can gauge how it will run at its work and when investing. The signs, we are told, are all to the good, and of course we all know that pure optimism is contagious, far more so than hopeless pessimism. Even in the Peace "rag," therefore, there is much to be learnt, and it points to confidence in the future and a determination to make the most of things at the moment.

All the same, let us watch the straws that are blowing about, especially the German straws. The Peace Treaty may have been ratified, but what then, what good will it do the Allies? Had Foch been allowed another fortnight to hammer and shell the Boche, and had the aircraft now being used to fly the Atlantic been put to their proper work of bombing Berlin, the Peace now spoken of would have taken much less time and paper to prepare and been far more binding and lasting than this one will ever be.

I say this because, of course, our happiness and prosperity are wrapped up in our ability to "keep the Peace," as the public, when they think of it at all, seem to imagine it will be kept. Meanwhile we

notice on the same page of the paper that speaks of the ratification of the Peace by Ebert, as President of the German Empire (note that it is still officially an Empire and therefore must have an emperor—somewhere), that in view of the raising of the blockade, the Board of Trade have issued general licences authorizing, with certain restrictions, the resumption of trade with Germany and German-Austria.

Yet following this came a paragraph stating that Max Harden, in the *Zukunft*, claims that Bolshevism is not robbery and that Germany can still mobilize six to eight million men for sensible reasons. Does this sound as if Germany means to be peaceful in military matters?

Leaving politics for trade, we are told that the first German commercial envoy has landed at Rio and secured many orders, and that a Dutch boat, the *Gelsia*, has arrived at Buenos Aires, with a Commission of Germans who have gone there with the object of studying the conditions of immigration. They announce the 5,000,000 Germans are prepared to settle in Argentina. What is not announced in public is that these Germans will not only filch trade from the Allies, but, by taking their wealth, and possibly the bulk of Germany's floating wealth, to Argentina, will evade taxation and whilst they suck Germans dry of money on the one hand and South America on the other, will thus be able to avoid paying their share of the war on this side. The German has always shown himself an able man in finance. He draws in cash as a big financial concern, but he pays out as a man of straw, which means that he never pays if he can help it. This is how Germany is already working to avoid keeping the Peace in commerce.

Going to more savoury subjects, we can only say that all business is in a state of suspense because, at the bottom of their hearts, no one trusts the Germans abroad or the Labour Unions at home. We are not running away to Latin America to avoid paying for the war in Europe, and so, as was ever the case, it is this country and France on whom the main cost of the war will fall, both with regard to comfort and wealth. No wonder therefore that no one shows individual enthusiasm or interest in Peace and Peace Day. We were promised a three-day holiday, but such a farce was too much, so we are only to have to-morrow (Saturday, July 19th) morning, that is, we really get no holiday at all in which to celebrate Peace. This is as it should be, for there is no real peace to celebrate. Had the war been prolonged another fortnight, there would have been; or else we have not been told the truth.

Meanwhile markets continue strong. Sugar seems inclined to go up, it certainly should remain firm, although Cuba seems certain to top the 4,000,000 ton record, but Germany, on the other hand, from all accounts, will have to import. The cost of sweets, however, like everything else, is ridiculously high, and as no restriction of price exists, some emporiums are asking 3s. per lb., instead of 2s. 8d., and chocolates also seem likely to go up above the 4s. per lb. limit, but it is difficult to believe that the average quality will improve when one analyses the imports. Taken as a whole, prices all round for food and clothing in the United Kingdom are disgracefully, in fact un-

patriotically and quite needlessly high, one could even say dishonestly so. Only let the planters demand the profiteering prices asked by the manufacturers and the shops here and you would soon see D.O.R.A. raise her hand and administer slaps again right and left. This is what she has already done with the nation's supply of oils, whilst she does nothing to lower the bills for food and clothes. If the public are to be "looted" therefore, planters must at least see that they get their share of the "swag."

So far the planters have not had much to grumble at of late. Coffee and cocoa are both up, so are copra and coconut oil. Mysore coffee went up to 147s. 6d., Coorg to 144s. 6d., Nairobi to 142s. 6d., Uganda to 134s. and 138s. for pea-berry. Pea-berry Costa Rica touched 160s. 6d., and other kinds in proportion. Cocoa is dealt with in the next article. Cotton has run up and now stands at 20·85d. for fully middling, and seems likely to remain at 20d. and over for some time. East African sisal hemp sold at £69 to £75. With shellac, T.N. Orange is worth 385s. to 387s. 6d., and A. C. Garnet, 340s. for blocky. Rubber, on July 12th, was at 1s. 9½d. to 1s. 10d. or 1s. 10½d. for No. 1 Crêpe, and about 1s. 8d. for smoked ribbed sheet, against 2s. 5d. for Fine Hard, 2s. 2d. for Soft Fine, and 1s. 6d. for Caucho Ball. West Indian sheet balata is worth 4s. 2d., Venezuelan block 3s. 4¼d., and fair Panama block about 2s. 6½d. Copra is around £58 to £59, and coco-nut oil something over £90 a ton, but prices are not quoted. Vegetable oils generally tend upwards and so do prices for industrial concerns, as the Maypole Dairy (and Margarine) Co., the British Oil and Cake Co., the United Premier Oil and Cake Co., which need vegetable oils as their raw material are also higher.

The following table shows the principal points in the Bank of England's return on July 12th compared with a year ago:—

	July 12th	1919	1918
Bank Bullion	...	£88,670,445	£65,968,101
Reserve of Notes	...	25,378,570	28,727,545
Private Securities	...	83,335,770	109,922,050
Notes in Circulation	...	79,595,430	55,092,210
Rate of Discount	...	5 per cent.	5 per cent.
Price of 2½ % Consols...		52½	55¾
Price of Bar Silver	..	56¼d.	48¼d.

The London Cocoa Market.

BY THE EDITOR.

As we go to press I hear that the New York market has stiffened up considerably, it has been lagging behind France and even London; now I understand all this is changed. Allowing for all the duplicity that Germany will work into its keeping of the Peace and in carrying out her promises, absence of hard cash in Central Europe, for no one will trust Germany without concrete security, is preventing traders here from freely entering into negotiation to supply buyers who are feeding our enemies. Directly the blockade is lifted, and it may be removed before these lines go into print, then the demand from Germany for coffee, vegetable oils, cocoa, &c., is bound to be very

keen. Prices are already high enough to cause vegetable oils to be pilloried again by the Food Controller and the price limited. If cocoa goes higher one wonders whether a similar fate may not befall it, and if so at what level will prices be put.

Meanwhile sellers in Brazil are seriously considering the question of how Germany can pay for her food and raw materials, because the prejudice against German goods for some time will cause them to be a drug rather than a security, and, as already stated, no one seems to look upon Germany as having much visible cash. Of course the Junker element, the suppliers of the munitions of war, and probably many of the leaders in the war, have made huge fortunes, but if Erzberger can get his proposed tax on property accepted, even these profiteers will be mulcted, as they should be.

I am obliged to touch upon these details—which are no details at all—because on the solution of them will depend the influence of the German demand for foreign foodstuffs and raw materials. The demand already exists, that no one denies; the ability to pay for the goods is another matter. I have therefore mentioned one or two points to show the need for caution, and having done so must leave my readers to take care of themselves.

Meanwhile, as the *South American* told its readers on the cover of their issue for June, the United States are needing as never before the products of Latin America, and that includes our own West Indian islands. Coffee and cocoa are staple products which the whole world demands, and in the period of reconstruction now imminent the world will need these as well as the rubber, hides, &c. Economically, therefore, the Tropics, and especially Latin America, are bound to progress; they will possibly do so during the next fifty years more than they did in the past four hundred. I therefore reckon that cocoa, among other tropical products, is in for a good time.

Knowing this has perhaps caused the Cocoa Bean Importers' Association in America to turn itself into a permanent organization. Originally formed as a war-time concern, it was found that the organization performed such valuable services to cocoa importers and buyers whilst the war lasted that it was considered to be to the advantage of the industry to carry on the Association and develop it as fully as possible. Planters in and exporters from the Tropics should take note of this body therefore, about which the *International Confectioner* of New York has a good deal to tell us in its June issue, p. 63.

Another point that will affect the demand for cocoa and the stampede to buy it at any price when it does come along unchecked will be the supply of sugar. If it turns out to be true that Germany produces only a million tons during the coming year, and has to send 450,000 tons to France, that may cool the German's anxiety to get raw cocoa to a considerable degree. For all these and other reasons no one connected with the cocoa trade, raw or manufactured, is likely to feel dull during the next year or eighteen months.

Turning now to English affairs entirely, the following particulars show receipts and deliveries in the U.K. for the first half of this year of peace. Out of

the 15,925 tons landed in June only, 8,932 came from British West Africa, and out of the 76,758 tons received in the six months that centre contributed 53,294 tons. The remaining 23,500 tons included 8,100 British West Indian, 6,987 Ecuador, and 2,345 Brazil.

Raw Cocoa Movements in the U.K.—				
	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, June 30th. Tons.
Jan., June, 1917—	6,121	3,631	294	58,350
„ 1918—	232	5,256	—	20,200
„ 1919—	15,925	4,179	1,049	67,400
	Incr. 15,693	Decr. 1,077	Incr. 1,049	Incr. 47,200

At 15 bags to the ton, therefore, we had just over a million bags on hand, which is somewhat substantial, especially as Havre has over half a million more and six or seven boats on their way to that port. What Bordeaux now has I cannot say for certain, but at the end of April her stock was 173,000 bags. She has therefore gone back to her old position of being far behind Havre instead of much ahead. Paris on April 30th had 3,463½ tons in stock, against 4,807½ tons at Havre and 4,297 tons at Bordeaux. I feel, therefore, that there is still a good supply of raw cocoa in France besides what Havre has.

Whilst I am about it I may as well give the Havre stock, and then we will go on and discuss the cocoa output on the Gold Coast and its prospects.

Havre Stock, June 30th—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	1,010	150 to 160	2,115	136 to 140
Bahia ...	44,082	160 „ 175	11,061	132 „ 138
Venezuela ...	8,887	175 „ 200	9,041	140 „ 175
Trinidad ...	14,972	172 „ 177	16,779	129 „ 144
Grenada and O.W.I.	4,033	167 „ 176	13	130 „ 136
San Thomé ...	4	155 „ 163	629	130 „ 135
San Domingo ...	4,256	150 „ 155	694	131 „ 135
Haiti ...	11,869	132 „ 160	1,986	122 „ 130
Accras, &c. ...	101,568	132 „ 138	2,015	125 „ 130
Guayaquils ...	91,264	168 „ 176	9,809	138 „ 144
Others ...	1,460	—	4,485	—
Totals ...	283,405 bags		58,627 bags	

Besides the above there was, on June 30th, 233,000 bags waiting to be cleared. This included 130,000 bags from the Gold Coast (on the top of 89,925 bags received in June), 42,600 from Trinidad, 18,000 from Bahia, and 29,000 from Guayaquil.

Considering that Havre only had 16,427 bags of Accras in stock at the end of May, the sudden advent of 90,000, plus 130,000 bags (and more to come), is very striking, and makes one therefore turn with increased interest to the Annual Report issued by the Department of Agriculture on the Gold Coast for 1918. As the Report is dated March 31st it has been compiled and sent across with commendable quickness this year compared with reports in the past.

The cocoa returns show that the paucity of tonnage considerably shrunk last year's exports and consequently increased the stock lying idle at the ports at the end of the year, when some 80,000 tons are reckoned to have been marooned in spite of heavy shipments between the signing of the Armistice and the end of the year.

Owing to inadequate tonnage the Gold Coast only exported 66,343 tons last year, against 90,964 in 1917. The two crops were distributed as follows:—

Gold Coast Exports, Jan.-Dec,—

To	1917	1918
	Tons	Tons
U. K.	40,553	30,606
France	20,988	2,539
U. S. A.	29,007	31,384
Elsewhere	416	1,814
Totals	90,964	66,343

Of course this reduction was largely due to the necessity of giving all preference possible to vegetable oils. The Report partly shows this by means of the following index figures, which give comparative average values (not weight) shipped year by year:—

	(Local Value at Accra)					
	1910	1916	1916	1917	1918	
Cocoa	100	123	139	90	71	
Copra	100	96	132	167	162	
Palm-oil	100	99	108	153	158	
Palm Kernels ...	100	95	112	120	131	

Turning to another large producing centre, viz., Ecuador, returns from which have not been coming to hand for nearly three months, I can now give the receipts at Guayaquil City to mid-May as under: January 1st to May 15th, 1919, 364,843 quintals; 1918, 305,309 quintals; 1917, 375,740 quintals. What proportion of the receipts was exported and where sent to we are not told unfortunately.

Grenada exported between October 1st and June 6th 53,050 bags, against 62,266 last crop and 73,254 bags in 1916-17; here again we are not told how the exports were distributed. With Trinidads, however, we have had some details, for during the eight months October-May, inclusive, 218,119 bags were exported, of which France received well over half, viz., 128,709 bags, the U.K. 43,670, and America only 45,740 bags. Judging from all one hears, when the Trinidad figures to the end of July come to hand the proportion sent to America will be considerably raised. The United States are also, I am told, taking in a good deal of West African just now.

The congestion at the docks on this side and the uncertainty of giving credit on the Continent has reduced the demand for raw cocoa to almost zero for the time being and brought down the price of fine Grenadas from 128s., which they touched at one time, to 126s. at the sales on July 8th, when the position caused all but very few bags to be bought in, less than 400 out of the 15,300 bags on sale were disposed of.

Based on the business done, values on that day, July 8th, ruled as under, later news will be given in the concluding paragraph, and on that readers will be able to adjust rates accordingly. I would claim, however, on ahead, that at the least sign of a clearing in the commercial atmosphere Grenadas will jump back to 128s. for export, and then if the atmosphere seems likely to be cleared permanently and shipping comes along to stay, a further 3s. to 4s. will come, and so make the top price equal to 131s. or 132s. for export, unless *force majeure* comes along and cuts it

down, but this is not likely. Taking present values, however, on the basis of 125s. and 126s. for the best Grenadas, I would value other growths as under:—

Trinidads.—Middling red, 123s.; good middling, 124s.; good to fine marks, 125s.

Dominicas, St. Lucias, Jamaicas, 123s. to 124s. for the best marks; 120s. to 122s. for good fair to good red. Fancy Jamaicas should do much better than this, but then this *Criollo* strain does not seem to be forthcoming.

San Thomé was valued at 112s. f.o.b. Lisbon, so cannot be valued here on that basis. Fine sold the other day at 120s., which was somewhat low against Grenadas.

Bahias have been freely altered, but barely sell at all. The best, which are valued nearly up to Grenadas, seem likely to sell the easiest, and any really good superior should certainly touch the level of fine Grenadas. But then there is no such cocoa about. Fair fermented sold at 116s.

Venezuela continue to sell high or not at all. The best that has been offered in London is worth well over 160s., whilst middling unclayed sold at 133s.

Guayaquils are worth 125s. or 126s. for the best grade of Arriba; Epoca sold at 123s., and Machala and Caraquez is worth 122s. or a little less.

Ceylons.—Fine have not been offering lately, but should be worth within 5s. of the best Venezuelan, with 125s. to 140s. for fair to good bold.

Wileman's Brazilian Review confirms what I had heard and already stated about sellers' attitude to Germany, for in a recent issue, thinking of the coffee, cocoa, &c., that they have for sale, we were told that "The stock of gold in Germany will be exhausted by the Allied demands for cash payments, and what the mark may go to when restrictions on imports are removed is difficult to imagine. According to the announcement in our last number, the idea seems to be to make Rotterdam the point of clearance for German imports and exports, whereby, in the absence of gold, a basis for fixation of German exchange may be arrived at, though it is difficult to see how the enormous requirements of Germany regarding food-stuffs and raw materials can be met by any probable accumulation of exportable products."

According to the *London Confectionery Journal*, Canada is making a bid for the English chocolate trade. If they bring along a really high-class chocolate and so force our home makers to follow their lead and leave Accras for the Continent, then we wish our Canadian visitors the best of luck and hope they will have good sales. Meanwhile the retail trade seems quarrelling over the preference given to some shops by the Canadian suppliers, so evidently the make has caught on, Liverpool especially seems busy with these makes, and Scotland reports that a good deal is being done with the Dominion products. The idea conveyed is, that the English buyers are "kicking" against the restricted supplies, largely of an inferior quality, which they have had to put up with. Now they can buy Canadian and American makes of good quality at a fair price, they are doing so and apparently mean to do so until the home trade wakes up and gives them what they want. They will have to wake up soon, or it may be altogether too late. All this upheaval in the retail trade here will increase Canada's importance

as a buyer of raw cocoa, I hope it will make them buy fine growths and the best grades of mediums only.

I am glad to see that the last issue of the Imperial Institute *Bulletin* (vol. xvii, No. 1, 1919, John Murray, 2s. 9d. post free) devotes considerable space to calling attention to the importance of the cocoa industry of the Empire, as before the war public interest in this important food was entirely confined in this country to consuming it as a sweet or in the form of powder as a beverage.

In spite of this, the question of the production of cocoa in the different countries of the Empire, the world's consumption, and the cocoa trade of the United Kingdom are fully discussed. Of the many interesting points brought out two call for special mention. The first is the unprecedented growth of the cocoa industry in the Gold Coast, where the product is grown and prepared for the market entirely by the natives. The colony commenced to export cocoa in 1891, and it now produces more than one-quarter of the world's output. The other equally remarkable fact is the enormous increase in the consumption of cocoa in the United States in recent years. The consumption has trebled since 1913, and about one-half the total quantity produced in the world now goes to the States. When Germany settles down, I feel sure that her consumption will soon rival that of the United States. The day that the United Kingdom takes to raw cocoa in the form of chocolate in slabs or cakes, more so than as powder or in the form of sweets, our own figures will also increase to a level with America's, but not until then.

The cocoa industry of the Gold Coast is also dealt with at length in a message addressed to the Legislative Council of the colony by Sir Hugh Clifford, the Governor, which appears in the same number of the *Bulletin*. I should like to have seen a small space, even a couple of pages, devoted to the question of fermentation. In a popularly scientific publication like the Imperial Institute *Bulletin* it should have been easy to do this. Let us have the correct definition of fermentation, and also a statement to show whether the bean, that is, the cotyledons within the shell of the bean, can be prepared for market and its flavour brought out and fixed without fermentation. The cells must be emptied and complete oxidation take place. On that point all seem agreed. Where a difference of opinion arises is over the means by which the cells can be emptied of their original contents so that the air can obtain admittance. No doubt at next year's Congress, as in 1914, the experts will have much to say on the matter.

In conclusion, I have to report that important sales of Trinidads have taken place up to 127s., showing an increase in rates. Trinidads at first went at 124s. and 125s., then up to 127s., West African at 88s. to 90s., but for export higher prices are paid, say up to 97s. even. Receipts have been heavy, a single boat bringing in 50,000 bags of San Thomé.

This island—San Thomé—during the six months, January-June, sent 204,080 bags to Lisbon and 157,597 bags direct to elsewhere, making a total export for the half year of 361,677 bags. Lisbon delivered 144,011 bags during the six months, and ended on June 30th with a stock of 76,881 bags, against 195,236 bags last year.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 8.]

AUGUST, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:
"CINERARY, LONDON."

Telephone:
LONDON WALL 3151.

The Coming Rubber and Tropical Congress.

THE QUESTION OF UNIFORMITY IN CACAO AND OTHER CROPS.

As we have already said, we hope that one subject in particular will receive careful attention at the above congress, viz.: the standardization of tropical products especially those which go to form the raw material of important industries on this side as rubber, cacao, and also coco-nut and other vegetable oils.

With cacao, the question of uniformity or standardization must include an exhaustive discussion on the fermentation or oxidation of the beans. Opinions on this point differ so markedly that it may be found that a paper built up on a negative line of argument would be best.* If this were done, i.e., if the opener of the debate claimed, like Monsieur Perrot, that fermentation need not be done at all because oxidation is the one and only thing to trouble about, then those in the room could get up and show how and why such statements are incorrect. After eight years careful study of the subject, we have come to the conclusion that such a paper, denying every claim that has been made in favour of fermentation, would be perhaps the most likely way of "drawing the badger," which up to now has insisted in remaining out of sight and declined to come out no matter who called for it.

In their issue of May 18th, the *Agricultural News* of Barbados had an excellent article on "Uniformity in the Production of Cacao," which could well form the nucleus of such a paper. The tendency of the moment is for the big man to become bigger and the smaller men to disappear. Personally, we think the policy a most mistaken one, for small concerns run by a few people, perhaps a family or friendly group, can go on working when the big factory has a lock-out or the work-people have struck. But whichever is the best, for the time being, the authorities, who wish to get rich quick, are decidedly favouring big-scheme proposals and letting little men go to the wall. A reaction is sure to set in later, when the big concerns have proved to be too cumbersome, but until then the big man will hold the floor—on paper.

This being the case the producer overseas must be prepared to supply the raw material by the shipload instead of by the ton. To do this, the smaller and medium sized estates must co-operate and standardize their outputs, so that, when the big orders come along, there will be no difference between the fifty or five

* See p. 122, Mr. Harvey Brill on "Fermentation of Phillipine Cacao."

CONTENTS.

	PAGE
The Coming Rubber and Tropical Congress	121
The Fermentation of Philippine Cacao. Part I. By Harvey C. Brill.	122
The Cultivation of Rice. No. XI.—Rice in Saigon and French Cochin-China	124
How to get rid of Thrips. No. II.—Spraying Mixtures	125
Sisal for Selling. No. XI.—Sisal Machinery.—Messrs David Bridge and Co. Ltd.	126
The New Governor of the Gold Coast.—General Guggisberg	127
"Tropical Life" Friend.—No. 170	128
Plantation Rubber during the War	129
Cocoa in Japan and China... ..	130
Planters and Profits	130
Cacao Experiments in Trinidad	131
Trade, Politics and Finance	131
The London Cocoa Market... ..	133

hundred tons from fifty or more estates than between a similar quantity from one or two plantations.

Such a scheme is already apparent in the plantation rubber industry and could be easily arranged with West Indian cocoa, as already much that comes from St. Lucia or Dominica, but especially the former island, is very similar to that from Grenada, and this similarity could be made more general for, as the *Agricultural News* points out, if, as is but natural, cacao growers desire to obtain the highest possible price for their product, the best way to do so is to secure uniformity in the quality of the beans, as that is what the manufacturers most require.

The owners in Ecuador say that they are prepared to execute continuous orders; this should be quite easy as their cocoa is very uniform in type, and so is Superior Bahia and the best grades of San Thomé, whilst the West Indian kinds are, on the whole, very mixed. One can easily understand on the other hand, the *Agricultural News* goes on to say, that manufacturers are desirous of being able to rely on securing uniform lots of the various qualities they require with "body" flavour, aroma, &c., so as to enable them to turn out their blends with accuracy.

Of course, to guarantee uniformity in output the planter will have to be careful in the first place to pick only fully ripe pods and also to submit the beans to one uniform process of "sweating" and drying.

Seed selection, the maintenance of pure strains, the possibilities of scientific crossings of various kinds, especially of *Forastero* and Nicaragua or *Pentagona* cocoa, on Mendelian lines in practice as well as theory, that is to say on a commercial basis as well as in the laboratory or in the experimental lot, are also subjects that must, sooner or later, be brought up for discussion at one or other of these international congresses; we hope it will be sooner rather than later.

The same proposals can be applied with advantage to oil-palm products. With oil-palms there is undoubtedly sufficient difference in the various kinds, and in the nature of the formation of the fruits and their kernels, to make a discussion of the points raised and of information obtained both interesting and profitable.

The cocoa market report this month (p. 133) offers two excellent subjects for discussion, viz.: What is Nicaraguan cacao, and which variety went to Ceylon? and Why does Ceylon have such good yields per tree and per acre if it is true that estates are yielding up to 9 cwt. per acre?

On June 26th, the *Confectionery Journal* of London asked, in its opening article, for a congress and gave the following list of subjects for discussion:—

1.—Scientific.

- (a) The fermentation of cacao and the standardization of the darker grades.
- (b) Criollo cacao—is it doomed to extinction?
- (c) The calorific value of cocoa and chocolate as a food compared with meat, milk, eggs, &c.

2.—Manufacturing.

- (a) British *v* Dutch cocoas, or extraction *v* the alkali treatment of the fat.
- (b) Is British chocolate on the whole above or below the average value of American makes?
- (c) Is the supply of Accras and San Domingo cacaos

in excess of the demand were the public educated up to appreciate choice chocolate?

- (d) Is England deliberately restricting the output and lowering the quality of her chocolate?

3.—Distribution and Retail.

- (a) Is the market overdone with powder and why are (retail) prices so high?
- (b) Is there a danger of Canada and America obtaining a grip on the English market?
- (c) Why do children invariably buy milk chocolate if left to themselves?
- (d) Can Canada increase its output of milk chocolate to help the United Kingdom whilst milk is scarce and dear over here?

Who cannot add to such a list? Who could not draw up as long, and even a longer list of subjects connected with coco-nut and vegetable oils.

The Fermentation of Philippine Cacao.*

By HARVEY C. BRILL.

PART I.

(From the Laboratory of Organic Chemistry, Bureau of Science, Manila.)

IN an article by me† the statement was made that "the necessity for fermenting or sweating cacao is now generally acknowledged." This assertion "challenges trouble," declares the editor of *TROPICAL LIFE*,‡ since "no two experts seem agreed on this matter." However, the consensus of opinion appears to be with the above statement.§

Booth and Knapp, of Messrs. Cadbury Bros., Ltd., state:—

In general, we believe that if the planter only allows ripe pods to be gathered, ferments for a reasonable period, cures with care, and keeps the beans dry they will have the right appearance, and that he will be producing the best that the types of trees on his plantation will produce . . . We understand that *unfermented* cacao finds purchasers, but fermented cacao always obtains the higher price; unfermented beans are more difficult to shell, and they produce an inferior cocoa. Partially fermented beans suffer from the same defects.||

* Received for publication November 17th, 1916, and published in the *Philippine Journal of Science*, vol. xii, No. 1, for January, 1917.

† The "Enzymes of Cacao," *This Journal*, Section A (1915), 10, p. 123.

‡ Smith, Harold Hamel, *TROPICAL LIFE* (1916), 12, p. 5.

§ Booth, H. P., and Knapp, A. W., *Proc. Third Internat. Cong. Trop. Agr.* (1914), p. 225 *et seq.* Tropical Life Publishing Department.

|| When we said that fermentation was not needed, we referred to the process necessary to prepare the beans for their final curing, whether through oxidation or other agencies. The present way of "sweating" or fermenting the beans may be, and probably is as we find ourselves to-day, the most economical with regard to time, trouble and expense; but that does not prove that fermentation is necessary. This is why last month, at the conclusion of the cocoa market report, we said, "Let us have the correct definition of fermentation, and also a statement to show whether the bean that is the cotyledons within the shell of the bean, can be prepared for market and its flavour brought out and fixed without

W. H. Johnson, F.L.S., Director of Agriculture, Southern Provinces, Nigeria, says:—

Fermentation is more generally practised than hitherto, but the period of fermenting and curing is too restricted.

S. H. Davies, of Messrs. Rowntree and Co., while insisting that the fermentation is due to the action of wild yeasts in the beginning and that the later action is due to true yeasts, believes fermentation alone brings out the best flavour. Bainbridge and Davies¶ have shown that this flavour is due to the presence of an essential oil, which they believe is formed during the process of fermentation.

The only discordant voice raised at this Congress was that of Professor Perrot, of the Ecole Supérieure de Pharmacie, Paris, who reported an experiment in which he submitted 200 kilograms of cacao, sterilized at the Ivory Coast, to one of the French chocolate concerns. When roasted this cacao became fragrant, and in no respect was inferior to the products obtained by fermentation in the same region. He states that the pulp was removed by means of potassium carbonate solution and that the colour was a fine violet. These two properties, the tenacity of the pulp and the violet colour of the nibs, are characteristic of the unfermented cacao and are reasons for fermenting, since both are undesirable.

Knapp,* in discussing the Perrot method, states that the beans had a compact, cheesy interior, that they dried more slowly than the fermented beans, and that the process would be more costly than the present methods and would require skilled labour. He concludes with a plea for the encouragement of the use of the best-known methods of fermenting by the planters. In his book on cacao, van Hall† says of fermentation:—

All are based on the same principle and have the same effect. This effect is the development of an essential oil, which gives the cocoa its peculiar aroma; the conversions of part of the bitter-tasting compound, so as to lessen the bitter taste; and, finally, the liberation of the theobromine, the substance which gives cocoa its peculiar tonic and stimulating properties.

These prominent authorities agree, with the exception of Professor Perrot, that the fermentation of cacao produces an improved product even though the changes taking place are not completely understood. To obtain various data that might throw some light on this process, the experiments recorded in this paper were performed. However, before this phase

fermentation. It has always seemed to me that the cells may have to be more or less emptied in order to allow complete oxidation to take place. On that point all seem agreed. Where a difference of opinion arises is over the means by which the cells can be emptied of their original contents so that the air can obtain admittance." Later on, probably in the October issue, we shall include some excellent notes on the subject, in "popular wording" kindly sent to me by Mr. A. W. Knapp, as he did not consider that we had got hold of the idea correctly, generally speaking.—ED., T.L.

¶ Bainbridge, J. S., and Davies, S. H., *Journ. Chem. Soc. London* (1912), pp. 101, 2209.

* Knapp, A. W., *TROPICAL LIFE* (1915), pp. 9, 227.

† Van Hall, C. J. J., "Cacao," *TROPICAL LIFE*, London (1910), p. 201.

of the work is taken up, several other points will be discussed.

Recently I have had an inquiry from the Hershey Chocolate Company in which a method for the improvement of the colour in poorly fermented cacao was requested.

In my article dealing with the enzymes of cacao the statement was made that no glucoside-splitting enzyme was found in the forastero cacao examined at that time. Since this article appeared, I have made an investigation of the enzymes of the criollo variety and found that an emulsin-like enzyme which split amygdalin, setting free hydrocyanic acid, exists in the latter. This same enzyme occurs in the forastero type, though not in as great activity. The enzymes found in the criollo and in the forastero types are identical in character, but in general they exist in somewhat larger quantities or more active forms in the former than in the latter. None were found that was peculiar to either type, and for this reason the results of the investigation of the enzymes of criollo are not recorded. The main difference is one of intensity of activity. The list stands as summarized for the forastero type in the preceding paper with the addition of an emulsin-like enzyme that exists in the unfermented seeds in somewhat greater activity than in the fermented product. The corrected list for the fermenting beans is casease, protease, oxidase, raffinase, diastase, invertase, and emulsin-like enzymes.

The Philippine Bureau of Agriculture, through its inspectors, has made a census of the various districts of the islands for the purpose of obtaining information regarding the quantity of cacao produced and the methods of handling it. In only a few provinces was there more than enough raised for local consumption, but in most of them the presence of trees was noted, thus demonstrating that cacao will grow in many places in the Philippines. No conscious effort is made to ferment the beans, and the methods of preparation are very crude. These methods consist in drying the beans, without preliminary treatment, in the sun from three to six days, rubbing between the hands with ashes or rice husks to remove the pulp previous to placing in the sun, or mixing with rice hulls and sand and treading with the feet and washing to remove the pulp and then drying in the sun. While the quantity grown at present is small, the fact that the regions in which cacao can be grown are widespread throughout the Archipelago is encouraging. The experience of other cacao-growing countries lends hope to the belief that the Philippine Islands may become important as a cacao-growing country. Tables showing the production in other countries, are recorded by van Hall, see his book, p. 499.

The tables he gives show that the total increase for 1912 in per cent. consumption based on the 1908 consumption is 45.3, while the increase in production based on the 1908 yield is 17.9 per cent.

The average increase in per cent. consumption for the five years 1908-1912 based on the 1908 consumption is 24.9, while the increase in production calculated in the same manner is 11.6 per cent.

(To be continued.)

The Cultivation of Rice.—No. XI.

(Continued from the February issue, p. 21.)

RICE IN SAIGON AND FRENCH COCHIN-CHINA.

REPORTS from the French colony on what may be called its one crop, remind us, at the same time, that Cochin-China is a purely agricultural country, so that the importance of the rice industry out there is substantial. With a probable population of 3,500,000, exclusive of those who evade registration, made up of several nationalities, numerous varieties of rice are cultivated, whilst the area increases year by year, although there is still plenty of room left for others.

Out of twenty provinces, the five in the East (Basia, Bienhoa, Thudaumot, Tayniuls and Giadinly), can only grow rice in the valleys, but in the fifteen other provinces, these being situated in the delta of rivers, Saïgong and others, the crop can be grown anywhere. When first taken in hand, the land is reported to be unfit for cultivation owing to stagnant water, which often causes an excess of alum. Where, however, the authorities open up a canal, the land gradually becomes of value, as the canal drains away the excess of injurious alum with the help of the rain or flood waters.

In a general way, says the *Bulletin of the International Institute of Agriculture* at Rome, whose notes in their November issue we are using as the basis of this article, it may be said that the clay soil of Cochin-China contains alum to a more or less marked extent. The fifteen provinces, it may be said, form one vast rice-field which, if not already planted, can and will be made use of sooner or later. Rain falls pretty regularly from May or June to October or November. The question of labour is eased on this account, for whilst the rains usually come early in the east and come later as the Gulf of Siam is approached, this enables the harvest to be gathered in earlier in the east, and allows a large part of the population to go and help with the harvest in the western provinces, where labour is generally insufficient on the large estates.

Production is encouraged by the fact that in September or October, at the time of transplanting, floods come over the land as well as the rain from above. The muddy waters of the river Mekong, for instance, spread more or less rapidly over that part of Cochin-China which is towards Cambodia, whilst elsewhere, the country being lower, the tides penetrate inland, bringing with them fertile mud.

Crops come very reliably, the output may vary, but there is never any danger of famine, although huge supplies are needed even for local consumption. It is interesting to note that maize can be and, in fact, is grown as a catch crop with the rice, as in Chaudoc and Longxuyen, where maize growing has been started, and tends to develop because the grain ripens and may be cut in three months. It may, therefore, be grown in many rice fields near watercourses, so that it may be easily watered, and the same land may yield two crops, maize and rice, of about equal value. Here, therefore, is an important fact which has from all accounts proved satisfactory in every way, and which will not only help to benefit the land by "sweetening"

it, but would give the producer a choice of two crops for sale or home use, as well as distributing the risks which arise when rice or maize is alone produced. French Cochin-China is of course no playground to go by, but a large producing centre which turned out 2,188,000 metric tons of paddy as its 1915-16 crop, and 2,350,000 in 1916-7. Of this, after reserving 100,000 tons for seed and local consumption, the balance was exported. With improved cultivation, which seems likely to be the order of the day, still larger outputs are looked for.

Although the expenses are heavy, the rice crops give a good profit. Yields vary from 80 to 100 *gia* (*gia* = 50·6 lb.) for the average rice field, but they vary from 20 to 50 *gia* only on poor soil up to 120 and 150 *gia* from the most suitable areas.

It would benefit the natives if they were provided with sorters to help them separate the grain (1) for sowing, (2) for selling, keeping the remainder for local consumption. If this were done the native could select the grain more easily and rapidly and supply better qualities for selling and sowing, so that, in the case of the latter, they would secure better yields. Good, inexpensive sorters should, therefore, be supplied, and if selection for seed were combined with the eradication of foreign varieties, the quality of their output would be rapidly improved.

Then, again, the natives gather their rice by cutting it with a sickle half-way up the straw. Animals do not take to the stubble, so, when the wind is favourable, it is burnt off. It would, however, appear to be more advantageous not to burn the straw but to plough it in. In the water-soaked soil the straw and roots would decompose rapidly and go to benefit the roots of the new plants.

(To be continued.)

MAKERS of baling presses, for cotton-planters and exporters, like our friends, Messrs. David Bridge and Co., Ltd., Messrs. Hollings and Guest, Ltd., Messrs. Shirtcliffe Bros. and others, are taking careful note of the movements of a distinguished American mission, which is visiting Europe to invite all organizations concerned in the manufacture and sale of cotton goods to attend a world's conference in New Orleans in October, and met Manchester business men in May. Every section in the United States, said Mr. Fuller Galloway, of Georgia, the leader of the mission, is of opinion that now is the right time to come to grips in order to place the manufacture of cotton goods on a sure foundation against the day when the world calls for the replenishing of its stores. Over \$100,000,000 worth of raw cotton is wasted through lack of better facilities in securing storing and exporting. We need proper storage houses, improved ginning and baling on the Egyptian pattern, and all other matters that can only be secured through international action. "Everybody," he added, "is in it in the United States—farmers, ginnermen, bankers, spinners, manufacturers, merchants, brokers. The present is the time when the lion can afford to lie down with the lamb. When we get on level ground we can fight again, only I believe we shall have more sense."

How to get Rid of Thrips.—No. II.

SPRAYING MIXTURES AND THEIR APPLICATION FOR THIRPS AND OTHER PESTS.*

(Continued from the July issue, p. 98.)

INSECTICIDES may be divided into two groups according as to whether they are for use against biting insects or sucking insects. [Figs. 7, 8, 9 and 10 show some types of biting insects, while figs. 13, 14 and 15 illustrate those belonging to the sucking group.]

INSECTICIDES FOR BITING INSECTS.

(1) ARSENATE OF LEAD.—Arsenate of lead is sold in two forms, viz., in paste and dry. In making up solutions mix the arsenate of lead into a thin paste with a little water before adding the full quantity.

Paste.—For use take

Arsenate of lead paste	...	3-5 lb.
Water	...	50 galls.

For small quantities take:

Arsenate of lead paste	...	1 lb.
Water (a pitch oil tin full)	...	5 galls.
or arsenate of lead paste	...	1 tablespoonful.
Water	...	6 quart bottles.

Dry.—Arsenate of lead powder should be used in the proportion of 1 to 4 lb. powder to 50 gallons water. It may also be used for dusting, in which case it should be mixed with flour, air slaked lime or wood ashes. For use take 1 lb. arsenate of lead powder to 2 or 3 lb. of lime, flour or ashes.

(2) PARIS GREEN.—Paris green is a useful stomach poison and is quick in killing insects, but it has the disadvantage of burning foliage if not properly mixed or if applied too thickly.

Dry application.—Paris green ... 1 lb.
Dry well sifted white
lime, flour or road
dust ... 6 ,,

Mix Paris green and lime thoroughly, place in a muslin bag, and shake gently over the plants.

Wet application.—Paris green ... 4 oz.
Temper lime ... 1 lb.
Water ... 50 galls.

(3) BRAN MASH.—

Bran	...	25 lb.
Paris green	...	$\frac{1}{2}$,,
Molasses	...	1 quart.
Water as needed for moistening.		

Mix bran and Paris green dry. Prepare molasses by dissolving in water, and use this for moistening bran and Paris green mixture.

For small quantities use:—

Bran	...	1 quart.
Paris green	...	1 teaspoonful.
Molasses	...	1 tablespoonful.
Water as needed to moisten.		

INSECTICIDES FOR SUCKING INSECTS.

(5) RESIN WASH (U.S. Department of Agriculture Formula) STOCK SOLUTION.

Powdered resin	...	10 lb.
Caustic soda	...	$2\frac{1}{2}$ lb.
Whale oil	...	20 oz.
Water	...	5 galls.

The first two ingredients are placed in a kerosene oil tin with a gallon of water. Boil until the resin is melted, then add whale oil. Boil until liquid has a dark brown colour. From one to two hours will be necessary. Care should be taken that the liquid does not boil over, and when water is added it should be poured in slowly and thoroughly mixed. Before taking off from fire add water and fill tin.

For use take one bottle (quart) of this stock and add to a kerosene tin full of water. This forms a strong solution that will kill most insects and not injure plants. When used hot it is more effective. Weaker solutions can be used according to the insects to be killed.

(6) NICOTINE SULPHATE OR BLACK LEAF 40.—Nicotine sulphate is a ready-made insecticide of an excellent quality. It has good killing qualities and does not burn foliage easily. The labels of the makers give full directions for mixing. The following mixture will be useful for most insects of the vegetable garden.

Black Leaf 40	...	$1\frac{1}{2}$ teaspoonfuls.
Water	...	1 gall.
Soap	...	1 oz.

Black leaf 40 can be added to Bordeaux mixture and resin wash.

(7) SOAP.—A soap solution will kill many soft-bodied insects, and may sometimes be preferred for ease in preparing an insecticide in a hurry.

For use take ordinary brown or blue soap and dissolve in four or five gallons of water. If the water is used hot the spray will be more effective.

(8) PYRETHRUM POWDER.—When not safe to use arsenicals on account of plants intended for food, pyrethrum may be substituted, as it is harmless to man or animals. Obtain the powder as fresh as possible, and dust the plants liberally with it undiluted.

(9) BORDEAUX MIXTURE.—Bordeaux mixture is a standing fungicide, and its use in the vegetable garden will not only prevent fungoid pests, but it will also act as a good insect repellant. It mixes well with arsenate of lead, resin wash and Black leaf 40, and when thus combined becomes an excellent insecticide as well. For preparing large quantities take—

I.—Blue stone	...	5 lb.
Water	...	25 galls.
II.—Fresh temper lime	...	5 lb.
Water	...	25 galls.

When I and II are well dissolved mix by pouring together in a suitable barrel, and thus make up 50 gallons of mixture.

For use against sucking insects add:—

- From 4 to 8 oz. of nicotine sulphate of Black leaf 40 to every 50 gallons of mixture.
- From 6 to 10 quart bottles of resin wash to every 50 gallons mixture.

For use against biting insects add:—

- 4 lb. arsenate of lead paste to every 50 gallons of mixture.
- | | | |
|-----------------------|-----|------------|
| I.—Blue stone | ... | 3 oz. |
| Water | ... | 5 bottles. |
| II.—Fresh temper lime | ... | 3 oz. |
| Water | ... | 5 bottles. |

Mix I and II by pouring together into a suitable vessel.

* Reprinted from the *Trinidad and Tobago Bulletin*.

STICKER FOR BORDEAUX MIXTURE.—When the mixture is used on plants with very waxy surfaces, such as cabbages or cassava, a sticker should always be added. Resin wash will serve the purpose when added in the proportion of 1 quart stock to every 50 gallons of mixture, or the following may be used:—

Powdered resin	...	...	...	2 lb.
Washing soda	...	...	...	1 „
Water	...	...	...	2 quarts.

Boil above until a clear brown solution is obtained.

Use at the rate of 1 quart for every 50 gallons of Bordeaux mixture.

Measures used in connection with above formulæ:—

8 teaspoonfuls	...	...	...	1 fluid oz.
16 fluid ounces	...	...	...	1 pint.
8 pints	...	...	...	1 gall.

(To be continued.)

Sisal for Selling.—No. XI.

(Continued from the July issue, p. 99.)

SISAL MACHINERY. WHAT MESSRS. DAVID BRIDGE AND CO., LTD., CAN SUPPLY.

MR. F. A. G. PAPE, whose portrait sketch appears on p. 128, has been working for a good many years, as can be gathered by the remarks on that page, to place a sisal-cleaning machine on the English—and also on the International—market, a machine less cumbersome than the Bøeken machine of Krupp's, and more up-to-date than any of the fairly modern and fairly handy *Raspadore* makes. Such advantages would enable it to compete with the Prieto machine on its own ground, and beat it at the same time. The contest is a friendly one, but that does not mean that Messrs. Bridge will lose any points if they can help, when we really start to develop the resources of the sisal-producing centres as they can be developed, once we can prove that we have the machinery needed. Without the machinery no one can progress; knowing this is what set Mr. Pape thinking and acting.

As a result Messrs. David Bridge and Co., Ltd., recently issued a very attractive brochure on the subject of sisal machinery that leaves nothing to be desired so far as general information and illustrations are concerned. Further details will be supplied with pleasure either on application to Messrs. Bridge at Castleton and 35, Queen Victoria Street, London, E.C., or, if more convenient, to Mr. Pape direct, c/o The American Cotton Oil Co., at 65, Broadway, New York City, U.S.A.

The chief items in the brochure, the contents of which are mainly from Mr. Pape's pen, or based on his views, deal with three machines, viz.:—

Bridge's "Climax," Patent Breaker.

Bridge's "Acme," Patent Decorticator.

Bridge's Improved "Raspadore."

The breaker or leaf-crushing machine is quite simple and practical in structure. The raw material enters over a revolving feed-table of calculated speed, and the corrugated front rollers squeeze it, and whilst holding the leaves (sisal, sansevieria, New Zealand, Fourcroya, &c.) flat, disintegrate them down to a

quarter inch, this being the space left between the rolls. The material is then gripped by the rear rollers, which reduce it still further to $\frac{3}{16}$ inch, and meanwhile, should any hard substance get in, or should overfeeding occur (a common but serious item in the day's work that cannot be suppressed too rigorously), the contraction of the coil springs provided will increase the space by $\frac{7}{8}$ of an inch or more, or to a sufficient extent to guard against accidents. Such a machine has been designed for a speed and capacity to amply supply one decorticator with "ribbons" for a day's work and a half. At the same time it prevents waste not only in raw material, but also in time and money (as by avoiding irregular and uneven feeding to the decorticator) to the estate owner.

Up to the present this preliminary pre-treatment, claims Messrs. Bridge, has been neglected, and the cost, owing to that neglect, has been enormous, as anyone familiar with the working of a fibre mill and its surrounding enormous refuse heaps can prove. With the use of a breaker or crusher, however, the refuse heap will consist of nothing but pulp and bagasse, whilst the drying lines will show a full percentage of long, fine, smooth, and clean threads, and the fibre will be free from bruises and semi-fractures which, if present, soon break completely on account of the heavier treatment needed in the decorticator. The latter will also work better, be free from strains, and turn out better fibre at a quicker rate than if the crusher were not first used.

The "Climax" sisal decorticator is constructed on the opposed drum principle with automatic feeding and conveyor parts, like practically all types now in vogue, for it is a recognized fact that the old Spanish Raspadores from which this feature was evolved cannot even now be beaten for efficiency in scutching fibre leaves. The merit of the "Climax" consists in the practical, simple, and sound construction and assembling of the working parts, which preclude side-slip and clogging and undue wear and tear, all of which are potent sources of anxiety and the ever-present bugbear of the fibre miller of to-day. Belting is eliminated as much as possible in the running of this machinery, and the control is effected by means of the Heywood-Bridge patent friction clutch.

The more important (patented) improvements are a conveyor-chain movement, by means of straight-faced and cone and bevel gears.

(1) This device is constructed with due regard to the necessary chain-speed to obtain the highest possible amount of output commensurate with perfectly safe and smooth running. It is contrived in the machine body upon proper bearings and frames, well above the line of the leaf-feed, and a simple shield of sheet-metal protects it from any possibility of fouling.

(2) A highly important feature of the "Climax" is the patented leaf carry-over gear, the ingenuity and reliability in action of which consist in the fact that the second chain must grip firmly before the first one lets go.

(3) A most important device is the patent roller carriage hanging in the same frame in the machine body with the holding-down spring coils; both can be removed and replaced in a minute or two for repairs

or adjustment. The illustration in the book clearly shows how by means of two or more rolls on one chain-link an even pressure is exerted in the latter. Gravity is really the principle of the holding-down pressure exerted which the coil springs only serve to accentuate.

(4) The obviously perfect features are the hollow-bottomed race-ways with frequent trumpet-mouthed down-outlets of the "Climax" machine. The machine attendant need only squirt some water into the races occasionally and watch the down-outlets to allow the "Climax" to be run around the clock.

(5) The adjustment of the scutching-shoe is performed in the "Climax" by means of sliding rails and two pivot pins to a side. Most simple and rigid and strong, an operation which can be performed in a moment by anyone.

(6) The gripping ridges of the "Climax" chain-links are the outcome of years of trial and experiment. They will hold firmly and will allow no leaf to slip through, even if it is only held by a few filaments. And in spite of the heavy corrugations, they will not bruise the leaves, which contingency has been taken care of by outer rounded shoulders and the special construction of the links in general.

Discussing sisal factories and their sites, Mr. Pape, in his booklet, very rightly claims that the ideal choice of ground is to place the factory slightly lower than the fields, so that your many thousands of loads of raw material, i.e., leaves, will then go down to the scutching plant by gravity, while the easily pushed empty trucks go back up the incline with much less effort. Even with mechanical traction this is preferable.

At the same time remember that the factory itself should, let us even say must, stand on slightly raised ground, with a fall towards a rivercourse or brook. All drains from the machine house, washing tanks, &c., should be cemented right throughout, so that extreme cleanliness of the whole premises can be preserved. Frequent washing and flushing is a *sine qua non* of the whole process from one end to the other.

All the floors as well as inside the buildings should be of firm concrete construction with a smooth cement surface dressing.

The floors should have a slight fall from around the decorticators and crushers and power units, &c., towards the outer roof-slope edges of the buildings, and all the drainage channels from the machinery should lead unobstructedly into the main drainage system outside, so that a clean, sweet, wholesome condition can be preserved always with least trouble.

It is not sufficient to lead your waste and dirty water away from the houses, but to contrive a well-thought-out system of drainage down to your stream, or in the worst case, a declivity which in that contingency should not be less than a quarter of a mile away, if at all feasible. The farther off in that case the better. Do not, whatever you do, create a reservoir for mosquitoes to breed in.

Never lose sight of the fact that it is far easier to shift ten tons of fibre bales by rail or water than one ton by road. Locate your factory, therefore, as near as ever you can to one or the other in order to keep your charges within limits.

(To be continued.)

The New Governor of the Gold Coast.

THE papers of August 2nd, whilst so busily engaged in describing the Pageant of Triumph that was then being arranged to take place on the August Bank Holiday (August 4th), on the bosom of Father Thames, whom John Burns once called "Liquid History," still found space to give particulars of the man who is to succeed Sir Hugh Clifford as Governor of the Gold Coast.

Brigadier-General Frederick Gordon Guggisberg, D.S.O. is the man, and he ought to be as he undoubtedly is, we should imagine, well qualified to undertake the duties, to give them the full titles, of Governor-General and Commander-in-Chief of the Gold Coast.

We say this because of the record that lies behind the appointment. General Guggisberg was Director-General of Surveys in Northern Nigeria and Ashanti but latterly he has been an assistant Inspector of Training in France. If the new Governor-elect is still spoken of as the husband of Miss Decima Moore, it is partly her fault for having been so popular when on the stage. It is also partly the fault of both, as we all remember the interesting book that Major and Mrs. Guggisberg wrote on "We Two in West Africa," which we agreed and said was by "Decima Moore and her husband."

We hope to meet General Guggisberg this week, and discuss forestry and agriculture with him. Miss Decima Moore representing the Leave Club was present when Mr. Churchill, Minister of War, addressed the Women Workers whilst on his tour of inspection of the Army of Occupation.

THOSE who remember the exhaustive study of the Guayule Industry in America that Professor Francis Lloyd condensed into the paper which he sent across for our editor to read at the 1908 Rubber Exhibition in London will be interested in what the *India Rubber World* had to say on the subject in their issue of July last year. This article, under the title of "Guayule Cultivation a Success," lays the history of the industry before us brought quite up to date. The more enthusiastic ones even claim that with Guayule America can raise her own supplies of raw rubber. One may smile at such optimism, but, at the same time, you cannot help being interested in the work done, especially in the introduction of new species as the *Parthenium Lloydii*, named after Professor Lloyd, from which it is hoped larger supplies of rubber will be obtained. The scientists at work on this shrub claim that there are some 900 different growths (which means, we take it, varieties) of the plant, so it will not be surprising that so many clever men have been closely occupied in carrying on the work to increase the rubber content of the really ideal plant that has yet to be discovered or evolved. Well-known names are still attached to the concern carrying on the investigations. Besides Professor Francis Lloyd, there are Dr. Theodore Whittelsey, Dr. W. B. McCallum, who claims that he has discovered some 125 species, Dr. Kirkwood, Professor Hare, and a number of others.



"Tropical Life" Friend.—No. 170.

MR. F. A. G. PAPE, F.R.G.S., F.R.H.S.,
co-Author of "*Coco-nuts—the Consols of the East.*"

WRITING us as recently as April last when acknowledging the receipt of his February and March issues, Mr. Pape told us that he found *TROPICAL LIFE* going strong and growing better and better with each issue; that it was improving likewise with age and maturity.

"With Peace ahead," "Our Friend" went on to say, "we are all confidently looking forward to a period of renewed activity in the foreign field which is so immensely full of possibilities. The tropics are bound to be utilized for producing cheap food for mankind."

We have journeyed round the world with many men—in armchairs—but no one can swish you round and about like Mr. Pape. His knowledge of geography is immense, his fund of personal reminiscences is inexhaustible—Billy Hayes and the bad old days of copra-collecting, America and the whaling trade, Australia with sugar, lumber, &c., or the full tropics with coffee, coco-nuts, and fibres are all alike to him. He never repeats himself, and yet could talk to you for a week on end without coming to an end of his experiences and views of life generally, and of tropical development in particular. Furthermore, you are learning from him all the time.

Gathering our somewhat scattered wits together in order to call to mind a few of our conversations, the chief fact which has impressed itself on our mind is that when we met to work hard, we soon found every time that, so long as we were in the same room, we never, by any chance, did anything else but talk, so had to go into separate rooms to make progress. We believe that "Our Friend's" first attack of Wanderlust took place on an American whaler, the *Canton*, which set him down in Australia in June, 1884, when eighteen years old.

The port he sailed from, and the one he landed at, we do not remember, but we can call to mind that he spent the next five years, 1884-1889, in exploring Australia, particularly the West, North-West and North, overflowing into New Guinea, in Papua, the Aroe Islands, and finally reaching the northern section of the East Indies. During this period Mr. Pape worked at lumbering, sugar-production, jungle-produce and coco-nuts.

Then he went to America and worked at freight and shipping for two years, then reached out to Ceylon, the Straits Settlements, Malaya, and got mixed up in a variety of products, including cloves, about which he had much to say. From 1897-1901 he reached farther afield and pretty well covered India, also Burma and Siam, finally drifting to the Comoro Islands in the Mozambique Channel, and from there went on to East Africa, Uganda, Zanzibar, Madagascar, and the Seychelles.

After that our mind is a bit hazy, but by 1901 we believe the Congo had been added to the above via Angola, Cape Colony, Natal, and Rhodesia.

All this time Mr. Pape had steadily absorbed all the information he could about coco-nuts and oil-palms, and also of fibres. He learnt much of other industries, too (as you discover if you try to find out some crops and some place that he does *not* know) and for a little time now, say from 1901-1903, "Our Friend" was trying to turn his knowledge to some account, first in London and then in New York.

The year 1904 found him a member of the Mombasa Club, and from 1903-1907 Mr. Pape was out in British East Africa studying the coco-nut, sisal, lumber and cotton industries, but sisal seems to have been his favourite, and whilst there the photograph at the head of the page was taken. Whilst at Nairobi he was elected a Fellow of the B.E.A. Horticultural Society. Back again in New York in 1907-1908, "Our Friend," having studied the crops on the field, went in for a course of practical mechanics with a view of understanding and perfecting the machinery then available for the treatment of tropical crops as well as with a view of introducing new ones if required; and, in conjunction with Messrs. David Bridge and Co., Ltd., he made use of this knowledge when he placed upon the market his "*Haraka*" Dryer (in the Swahili language *Haraka* signifies speedy) and his various sisal machines, some of which are discussed this month in the article on "*Sisal for Selling.*"

No one can deny, therefore, that Mr. Pape knows the tropics and has travelled widely, "meandered around a bit," we believe, is his own expression, and all the time, whilst discussing the people, their ways, their crops and their methods, he left no doubt on your mind that if he had a favourite it was coco-nuts and vegetable oils, and after that sisal and fibres.

Business Notices.

1.—The address of TROPICAL LIFE is Messrs. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

AUGUST, 1919.

Plantation Rubber during the War.

EVEN the great slump of 1913 was more easily borne we are told, than the experience through which the rubber industry passed in 1918. During the first half of 1917 the high figure of \$175 per picul (133½ lb.) was realized locally. The highest price recorded during the first half of 1918 was \$112 per picul. In August the price had fallen to 39½ cents a lb. (100 cents=\$ or 2s. 4d., say, \$53 per picul) and remained at a low level until the end of September, when prices began to improve.

Early in the year considerable pressure was brought to bear by the Rubber Growers' Association to secure voluntary reduction of output. It was generally agreed that a voluntary system of restriction would be futile, and that if reduction of output was necessary in the interest of the industry, it should be universally enforced by legal measures.

When it became known that the United States Government had restricted imports to the rate of 100,000 tons per annum the situation became critical. In a letter dated July 13th, our Association asked the Government to take control of the industry in view of

the seriousness of the outlook. The Government considered that sufficient cause for intervention had not been shown. On July 20th, the Colonial Office (London) cabled to the Malayan Government regarding a scheme of control and fixed prices. No action was taken by the Local Government until 16th August, when a Commission under the presidency of Mr. W. George Maxwell, C.M.G., was appointed. The Commission issued a valuable report dated October 2nd, recommending inter alia (a) restriction of output (to 200 lb. per acre) and (b) a minimum price of \$1 2s. 4d. per lb.

Had it not been for the voluntary restriction in 1918, self-imposed by a large number of estates, the output of rubber for that year would have been considerably larger than it was—this Committee inclines to believe that at least 25,000 tons were not produced owing to such restrictions and the fact of the market being relieved of such a quantity was of great benefit to the industry.

At the height of the crisis native unsmoked sheet was selling at the Singapore auctions for 25 cents per lb. and lower grades for 4 cents a lb.

The producers at one time were literally giving their rubber away, in a good many cases at considerably less than cost price, and it was largely bought up by speculators in the hope that the market would improve.

The Malayan rubber industry produced about 130,000 tons rubber in 1917 which sold at an average of about 2s. a lb., total value being about £29 millions. In 1918 a very nearly equal amount was sold at an average of about 1s. 3d. a lb. or total value of about £19 millions. Therefore the large sum of ten million sterling was lost to producers last year. Prompt and vigorous action as regards restriction and control would have saved this tremendous loss.

No reasonable person can gainsay that the producer was not entitled to two shillings a lb. for his rubber nor can it be said that the manufacturer was really unwilling or unable to pay this fair figure for his stocks.

The price of tyres was considerably less in 1910 when rubber was 6s. a lb. than in 1918 when the price of rubber was only one quarter of that figure.

In London the price of rubber during 1918 fluctuated only 6d. a lb. between January and December, the highest monthly fluctuation was from 2s. 3d. to 2s. 5½d. in January. In no year has there been such a small variation in price.

The effects of the low price, increased cost of production, freight and war risk are already observable in the annual reports of rubber companies now being published. In every case there is a very substantial reduction in profits and in numerous instances dividends have been drastically reduced or passed over altogether. In some cases a loss on the year's working is actually recorded.

As to the future, all attempts to control production appear to have been abandoned. Nevertheless the necessity for the industry to possess some organization which would be capable and powerful enough to meet the position created in supply exceeding the demand for any particular period must not be lost sight of.¹

¹ Supplies need not exceed the demand, if a proposal on the lines suggested in our leading article last month (see July issue, p. 113) were adopted.—[Ed. T.L.]

The value of raw rubber for commercial purposes is undoubted and the demand for the produce throughout the world for several years to come will be enormous. But the producing capacity of plantations is also very great and will continue to increase.

The controlling factor at the present time is labour—labour for tapping the trees as well as sufficient labour for tackling pests and diseases. Any slacking off in this work is bound to affect the future yielding powers of estates.

This shortage of labour is likely to continue for the greater part of this year so that no particularly great increase in production is to be looked for.

America has now withdrawn all restrictions and if matters settle down rapidly in Europe there will be a great demand for the commodity there also.

During the year 1918 the rubber market in Singapore passed through the most eventful period in its history. The quantities disposed of reached record figures, auction offerings alone amounting to 51,161 tons, against 41,452 tons in the previous year and 24,699 tons in 1916. Coupled with the large quantities on hand the market had to face the unique position of being the only free market for rubber. Thus Messrs. Lewis and Peat in their annual report say, "The outstanding feature in rubber during the year is undoubtedly the great increase and development of business done here (London) for delivery in the Eastern Markets."

Cocoa in Japan and China.

CAN A DEMAND BE STIMULATED?

TALKING of cocoa in Trinidad, makes one wonder whether, with a little push, the sale of choice chocolate both for eating and drinking could not be pushed in China and Japan. Of course, compared with tea or even with coffee, the consumption per head would be very small, but that does not say that in the aggregate considerable quantities would not be consumed and with the increased output on the Gold Coast and in Bahia any increase would be welcome.

An increase of one ounce of sugar per head in India takes up about 10,000 tons, so that even if only the same single ounce of cocoa per head was consumed in Japan and China, to say nothing of Corea and Siam to start with, that would take up a good deal of raw cocoa in the course of twelve months and form the nucleus for a large demand in time.

This idea for a fresh outlet for cocoa was suggested by reading the following paragraph in the *Journal* of the Japanese Chamber of Commerce at Yokohama, where we learnt that plans are now under way for the establishment of a large café in Osaka, if not the largest in Japan, in which approximately 3,000,000 yen will be invested. There is a good saying to the effect that the people of Tokyo are proud of their prodigality, the people of Kyoto care about their clothes more than anything else and finally the people of Osaka indulge in food and drink. Indeed one sees more restaurants, bars and cafés while walking through the streets of Osaka than in any other two cities. Reports from that city are that there are several important projects now under contemplation regarding the erection of several big cafés including

the one above stated which will have among other things an unusually spacious dining saloon accommodating three thousand persons.

At least let those who want to increase the demand for raw or manufactured cocoa, make a start on Osaka. The above statement makes one imagine it might prove fertile ground for such an experiment.

Planters and Profits.

THERE are those who claim that the big prices asked over here go into the pockets of the planter and farmer, whether the coco-nut oil used in soap and margarine or the ten guineas now asked for an ordinary suit of clothes which could be sold at five guineas, or a joint of meat that could be sold at half its present cost. We do not find any signs of this being the case. We sincerely hope that those who are producing our food, do benefit considerably from the outrageous prices we are paying as retail buyers to the middlemen and the shops. We have an idea, however, that the meat trust of America and the wool, leather, and other trusts everywhere, get the bulk of the "swag," taken from the pockets of the middle classes who do the bulk, practically the whole, of the development work in connection with agriculture and commerce throughout the world.

"How can the farmer feed the world when he has to compete with other industries in the present state of the labour market?" asked an Illinois authority, Dean Davenport of the University of Illinois, who then goes on to say (see *The Agricultural Review* of Kansas City, No. 10), that,

"The farmer has a big problem in the matter of wages. No matter how much agricultural education a man may get, nor how good machinery he may use, he cannot till enough land to bring him in as great a labour wage as the man who has ten dollars invested in a pick and shovel," he says. "Nor can the farmer give his children as good an education as the man who lives in the village or city, unless he gives up his business of farming and moves to town." Under such conditions Dean Davenport does not see how farmers are to feed the world even at present values.

The same paper recently asked its readers and the world generally, "When will well-meaning townfolk learn that 'Stay on the Farm,' and 'Back to the Land' movements organized by people who themselves would not stay on a farm on a bet, get nowhere. If some of the swivel-chair agricultural crusaders would grab pitchforks or hoes and start for the fields yelling 'come on,' instead of remaining in the shade and saying 'go on,' it might be different."

Surely if producers, tropical or otherwise, made the tremendous profits some folks (probably taking their views from the middlemen profiteers) seem to believe they do, such a paragraph would never have been written. In 1911 over 60,000 farmers and others left the United States for Canada, Sweden, Italy, &c., so the flow has been out of as well as into America.

Even last year Canada received 27,170, and other countries 3,556 farmers and others from U. S. A. During the eleven years, 1908-1918, no less than 314,000 men left the United States for Canada and nearly 56,000 for elsewhere.

This view is confirmed by the publication of the

following letter on "The Strangle-Hold of the Sugar Refineries on Sugar Prices and its Effect on the Producers."

TALLAHASSEE, Florida, July 8th, 1919.

To the Editor, *Louisiana Planter*:

Dear Sir, Allow me to congratulate you on your editorial, "The Strangle-Hold of the Sugar Trust on Sugar Prices," in your issue of June 28th. As you are aware, I have long contended that the principal, if not the only, reason for the failure of the Gulf States to produce the sugar of America has been the influence of the American Sugar Refining Company, whose object has been, at all times, to prevent the manufacture of pure sugar on the plantation, in order to monopolize the refining of raw sugars by themselves: who have controlled importations and tariffs on refined sugar, and have discouraged the American production of refined sugar.

Until the Gulf States produce standard granulated sugar direct from the cane, and save the cost of refining, the business of sugar production will not be profitable. As the Louisiana planter well knows, the percentage of profit made by the American Sugar Refining Company is far greater than that made by the producers of sugar cane, when sold as a raw product.

Prior to the world-war, 35 cents per hundred pounds was considered a fair differential for laundering 96 per cent. goods, and drying the same as standard granulated. Under the arrangement of the international sugar commission, these refiners were permitted to charge \$1.45 per hundred pounds for laundering 96 per cent. goods, an excess of \$1.10, or 300 per cent. increase above pre-war profits.

Yours truly,

R. E. ROSE,
State Chemist.

Cacao Experiments in Trinidad.

IN experimental work on cacao attention has hitherto been devoted mainly to trials with manures, not only in Trinidad, but in other cacao-growing countries also. From the report on the Department of Agriculture for the year ended December 31st, 1917, it would seem, however, that experimental work being now proceeded with at the Government property, River Estate, is of a more varied character than probably anywhere else in the world. It has also the great advantage of being conducted on a fairly large scale, and under estate conditions.

In one of these experiments the task of recording the individual yield in pods of some 10,000 trees is included. The results show that, speaking generally, heavy bearers continued to be heavy bearers, and the poor bearers to be poor bearers. It would seem, therefore, that the capacity for producing heavy crops—other things being equal—is a characteristic of the individual plant, and therefore is likely to be hereditary. The results of cross pollination and variation come into play with seedlings, but by budding and grafting individual characteristics should be transmitted unimpaired. For the purpose of testing this

question thoroughly, a 6-acre plot at River Estate has been planted with seedlings and with budded and grafted plants from the same thirty selected heavy bearers. The results will be looked forward to with great interest.

Budding from selected trees on to basal suckers of poor bearers has been successfully tried, and experiments are being carried out to test this under field conditions as a method of replacing poor by heavy bearers, and so increasing the yield per acre. Experiments with regard to the advisability of planting shade trees or not continue to give interesting results, but definite conclusions have not yet been drawn.

WE are glad to see that the *Confectionery Journal* (Messrs Maclaren and Sons, Ltd., who also publish the *India Rubber Journal*), the leading organ of the confectionery trade in England, has shown itself aware of, and has borne witness to, the wonderful work being done by the experts and authorities in India to improve the quality of sugar turned out by our Eastern Empire.

We have noted their remarks before but the opening article of their issue of August 14th on "India and her Sugar Industry" concludes by saying: "As we are to-day, it would be easier for a camel to pass through the eye of a needle than to secure that sugar which India could send us. Poverty and prejudice are like two mountains in India, and they must be removed before a reform can be looked for. Meanwhile, the articles and bulletins that have been, and are still being, published by the sugar-cane experts attached to the Indian Government cannot be spoken of too highly, both for the information they contain and for the valuable work that has been done and must be done by those who write the reports." A list is then given, including *The Agricultural Journal of India*, the *Mysore Economic Journal*, and various Bulletins, especially Nos. 69, 82 and 83.

Trade, Politics, and Finance.

THE COLONIAL BANK. INCOME AND EXCESS PROFIT TAXES. HOW TO EXPAND.

WE are glad to hear that the Court of Directors of the Colonial Bank has been further strengthened by the addition of Sir Herbert Hambling to their number. In October last we called attention to the important speech delivered by Sir Herbert as chairman of the London, Provincial and South Western Bank, Ltd. We should like our readers to refer to that article. With Sir R. V. Vassar-Smith, the late Sir Edward Holden (whose recent death is, as all the papers point out, both a national and an Imperial loss), also Mr. Goodenough, and now Mr. McKenna, we consider that Sir Herbert Hambling is one of the six leading banking experts of London, and that means of international finance generally.

Sir Herbert, we believe, has shown himself, the same as ourselves, to be in favour of bank amalgamations as being the best means of meeting the widespread manifestations of the German banking

and industrial machine and the enormous power it wields even to-day. We are glad, therefore, to see the present association of Sir Herbert Hambling with the Colonial Bank, as it is an association which is bound to help all round. It will be remembered that in the section on Finance in our last book, "How to Pay for the War," we pay careful attention to this German "machine," and how we could and must, if we wish to expand our trade, arrange to have the help of a similar machine in this country with branches stretching out overseas, and especially in Latin America.

This being so, we go back to our old idea that grows stronger as time goes on. We wish to see the Colonial Bank absorb the Bank of British West Africa, and work with the Royal Bank of Canada and some others, especially since the last-named bank, by Decree 13,619 of May 28th, has been authorized to operate in Brazil. The issue of *Wileman's Brazilian Review* of June 18th included an excellent photograph of the bank's premises in Rio. The Royal Bank of Canada recently became associated also with the London County, Westminster and Parr's Bank, Ltd., so that, with the other amalgamations which we have suggested, a more perfect cycle could not be wished for so far as the chief sugar, cocoa, &c., producing and consuming centres are concerned, since New York would be included under several headings, though possibly these in some cases would be merged into one in the course of time.

Meanwhile the question of a more suitable method of raising revenue by readjusting the tax on incomes and on profits has been receiving widespread attention, not from those who are anxious to pay less (although no doubt they have been making their voices heard), but by those who realize that, by a happy process of letting go here and there, the Exchequer would scoop in much larger amounts in the long run. The whole matter is worthy of attention, especially as many are declaring in their ignorance that, if the increased pay for which they are fighting, constitutionally and otherwise, is only to bring them into the grip of the Income Tax assessors, they do not want the rise; that is to say, rather than work for another 10s. a week, less income tax, they will not work at all. From all one can gather they are not doing so, and the overseas trade suffers thereby in every way.

Others ask that with the increased cost of living, an increase that tends to mount higher and higher, the minimum incomes immune from taxation should be raised from £120, the present amount, to £200, or, in the case of men who have taken part in the war, and especially if they have been wounded, the minimum be raised to £250. All these are reasonable requests, made on temperate and practical lines with the idea of not making the man or woman carry too much weight when they start. Relieving them in this manner will enable them to "get away" at once and start making good, and so be able to come in all the sooner as deferred contributors. Such relief, which is only bare justice, will give much more to the Exchequer in the long run than if the post-war starters are bled right from the start and so prevented from going ahead.

Two of the leading trade papers, the *Confectionery Journal* and the *Margarine Journal*, ask, for the same reason (viz., the 130 to 150 per cent. increase in the cost of living on pre-war rates), that no income under £600 a year should be liable to the profit tax. Commenting on the matter generally, the *Times* trade supplement of July 13th said that Mr. Austin Chamberlain (the Chancellor of the Exchequer) easily showed, and it has been proved again and again, that the profits duty is and has been a serious obstacle to the revival of industry. To this we would add that it has been a still greater obstacle to our overseas industries, without which we can never expect to develop the latent resources of the Empire and so help pay for the war.

The confectionery and margarine trade papers referred to compare taxed profits of trading concerns with the untaxed, but increased pay being doled out all round to all classes of employees who depend on the energies and enterprise of others for their living, and who do nothing to push the trade of the Empire and develop its resources. When others take this burden upon their shoulders and succeed, then these parasitic wage-earners batten on them and ask for more money. If the trade pioneer fails they leave them like the proverbial rats leaving the sinking ship. It may be a practical and paying policy to do so, but it certainly is neither a fair nor a dignified method of earning one's living.

"One wonders," the papers ask, because one paper is quoting the other, "whether the Government and other officials living on public money are paying excess profit taxes like the manufacturers and retailers (also the trade scouts) have to do if, by a miracle, they can show an excess profit over 1914. If a manufacturer (or trade scout*) makes £100 more than he did in 1914 he has to give £40 out of it to the Chancellor of the Exchequer. But as costs are over 130 per cent. more than in 1914, this means that £450 to-day will not go as far as £200 before the war. Would it not be fairer, therefore, if the smaller men were mulcted on a sliding scale, as with the income tax and no excess profit tax be charged at all on incomes of £600 a year or less even when £100 more profit is shown when compared with 1914?"

This is the gist of the remarks, but there is much more. We have said enough, however, to show how widespread is the cry to soften conditions with the smaller men anxious to go ahead; not to encourage them to evade paying their share, but to enable them to grow prosperous and give all the more in the end. Like the rubber trees, if you bleed them too vigorously at first you receive much smaller dividends throughout; you may even kill the trees and so get nothing at all in many cases.

Talking of rubber reminds us that we must now

* This term refers to the first part of the article which claims that big corporations and vast schemes cannot develop the resources of the Empire without the advance corps of trade scouts. "To start," we are told, "you must have the trade scouts, and you must finance and assist these scouts—not treat them as if it were an honour to be attached to your service. The honour is quite the other way." (See also "How to Pay for the War," price 5s. 6d., post free.

turn our attention to market reports. The August bank holidays disturbed the surface of affairs for a moment, but stimulated rather than slackened the demand and the firmness in values. Thus we find the markets for the week-end dated August 16th found more firmness in rubber, which the congested state of the docks and wharves was likely to encourage. On the date mentioned (16th) No. 1 Crêpe was worth 1s. 11½d. to 1s. 11¾d. for spot, rising to 2s. and rather more for delivery at the end of the year. Against this Standard ribbed smoked sheet was worth 1s. 10¼d. to 1s. 10½d. for spot, with 1d. a lb. added for December delivery. Hard fine was worth 2s. 5¾d., and soft fine 2s. 2¾d. against 1s 5¾d. for Caucho ball. Balata still commands high values compared with rubber, although present values are lower than they were. West Indian sheet was worth about 4s. 2d., Venezuelan block 3s. 2d. to 3s. 3d., Panama block, fair average quality 2s. 6d., and Tumaco block 2s. 8d. a lb.

Sugar remains firm with extraordinary prices still being paid for West Indian kinds, say 85s. to 87s. 6d. for crystallized and up to 100s. for white crystals, whilst 73s. and 74s. was paid for Barbados muscovado. We are very glad that these prices are being realized, for it is far better in times like these to put money into the pockets of the developers of our Imperial resources than into the banking accounts of the already over-loaded profiteers in Europe. At the same time we find it hard lines for sugar to be allowed to run up over five-fold in value without bringing the wrath of the food controller on them when cocoa, which is very little higher than it was in 1907, is being threatened with a sharp set back in values, at least for home consumption, on which 20s. per cwt. less is being paid for Accra kinds if the cocoa cannot be exported. There is such a thing as fair play, even if the war is not really over, except on paper, German paper this time.

London continues to be as good a distributing centre for coffee as it is for cocoa where the produce can be exported and steadily increasing prices seem likely to be paid. Fine East Indian realize up to 153s., Uganda Robusta 119s., Demerara Liberian up to 131s. or so. Cotton is worth between 18d. and 19d. for "fully middling" for spot, against 19¼d. for January delivery. Shellac is worth 465s. for T. N. Orange and 370s. or a little more for Garnet. Copra remains quiet at £60 10s. for Ceylon, £61 for Malabar, £60 for fair merchantable here against £66 at Marseilles. Coconut oil is worth £103 for Ceylon and £105 for Cochin against £101 for first castor oil and £120 for linseed. Copper rules from £98 to £100 and tin £268 to £270. The upward movement in the price of silver is phenomenal, and has placed the value on a level, we are told, with the price in June, 1874, of nearly 5s. an oz.

The following is a comparison of the principal points at the present time and in the corresponding week last year:—

	1919	1918
August 16th		
Bank Bullion ...	£88,287,745	£51,766,581
Reserve of Notes ...	24,897,370	29,313,315
Private Securities ...	81,222,618	100,187,874
Notes in Circulation ...	79,723,435	40,044,695
Rate of Discount ...	5 per cent.	5 per cent.
Price of 2½ % Consols...	52½	56½
Price of Bar Silver ...	59d.	48½d.

The London Cocoa Market.

BY THE EDITOR.

THE sale reported later on of some Nicaraguan Ceylon at 193s. 6d. reminds me that my old friend, Mr. Geo. S. Hudson, of St. Lucia, West Indies (whose estate, as shown on p. xxvii. of our advertisement pages is up for sale, a fact which I regret to say is due to his health not being as good as one would have wished so that probably he will be coming home), also was very keen on the Nicaraguan strain and introduced it on to his estate. At the time he sent me samples and claimed, very rightly I am sure, that if a little persistent trouble were taken by the planters, such a strain could be cultivated over a considerable area in the West Indies with advantage. I wish one could hope that such a thing was likely to become an established fact, it would do so much to "pull-up" the standard of the chocolates on sale. The late Mr. Hinchley Hart, author of the standard work on "Cacao," also wished to see Nicaraguan strains grafted on to the darker and more prolific *forastero*, but whilst saying this I cannot help asking the question, What is Nicaraguan cacao?

Hart in his book seems to differentiate between the Nicaraguan cocoas. He talks, on page 2, of Nicaraguan *Criollo* (*Amarillo* or yellow and *Colorado* or red), and says that the beans of the Nicaraguan *Criollo* are larger than the beans of the Venezuelan *Criollo*. Later on, p. 12, he points out that the beans of the Nicaraguan *Criollo* are larger than those of any other kind shown, but the beans of *T. pentagona* equal if not exceed them in size and are indiscriminately mixed with the *Criollo* produce in Nicaraguan. On p. 13, he seems to be of the opinion that commercial cocoa of fine quality is produced by *T. pentagona*, the beans of which are nearly double the size of the average Trinidad bean.

I point out these details because when looking at this sample of Ceylons, I at once said that they were *T. pentagona* beans, but in looking up my notes on Nicaraguan cocoa, I am obliged to acknowledge that there would be some difficulty to prove such a statement. The strain may be the same as the *Ocumare* of Venezuela which is *T. cacao* var *Criollo* pure and simple. To use slang, *Ocumare* is absolutely "it," from which, so I take it, the other *Criollo* beans have sprung; but then *Criollo* is not *pentagona*, it is *T. cacao* and so it would be interesting to trace back and find out for certain which of the two varieties from Nicaraguan was used in Ceylon to produce the beans that have just been sold at 193s. 6d. against (value) 160s. to 168s. for good Venezuelan and 126s. Trinidad and Grenada. Was it Nicaraguan *Criollo* or some *T. pentagona* or merely an indiscriminate mixture of both?

Such queries are of considerable importance to the cocoa and chocolate manufacturing industries throughout the world and especially to this country where the quality of the chocolate sold is very inferior and, I regret to see, there is no idea apparently of pulling it up; on the contrary it seems as if the palate and tastes of the public are to be lowered to the standard that has been on sale whilst the war was on and is no better to-day nor seems likely to be unless and until,

something happens to the trade in the United Kingdom equivalent to the San Francisco earthquake. If this state of affairs is allowed to continue we shall lose all taste and wish for even a decent quality of cocoa, much less for those qualities that one dreams of, knowing that they are obtainable, once buyers will pay the price. Luxury and extravagance never ran riot as they do to-day, they have become almost a mania if not actually a vice. What has the Food of the Gods done to be pulled down to the level of the Food of the Godless, and not too good even then? Look at the division of the various growths imported into the United Kingdom to the end of June, i.e., for the first half of the year and then ask yourselves how Montezuma (or even the modern Mexican consumer of to-day, who condescends to use fine Ceylon because he is too idle to grow more of his own beautiful kinds) would say to a cup of chocolate made up of the average blend of such a mixture. From what I remember reading of the ways of Montezuma and his contemporaries, had such a concoction been offered, the population would have been minus at least one of its members, and I cannot say that I should have blamed the ruler for once.

Centres which are not satisfied with their crops, and the output per tree and per acre, would do well to communicate with Ceylon and secure reliable returns of individual and collective crops of cocoa which are obtained there by the European-owned estates. I have been told that as much as 9 cwt. to the acre has been secured on at least one estate this season, and that the average yield for the European-controlled cocoa area was 4 cwt. per acre or a little more. If I did not misunderstand my informant; probably *the* most level-headed and reliable authority on Ceylon and her crops; such returns are marvellous, especially when it is remembered that even now the cocoa from Ceylon weighs much lighter than that from Trinidad, Grenada, or St. Lucia, and so takes more beans to make up a hundredweight, and also, I believe, that the trees are planted fairly widely apart, 300 to the acre, i.e., 12 ft. by 12 ft., and if not, then less to the acre rather than more. The actual spacing should be ascertained as well as the average yield per acre.

About twenty-five years ago trouble fell upon the "old red" of Ceylon, as it did upon the "old red" of Trinidad in 1727, and in both cases the old red succumbed and gave place to the hardier and more prolific *forastero*, but those interested in the physiology of cocoa must be struck by the fact that whilst in Trinidad the *forastero* has remained dark and strong, in Ceylon the cocoa, on account of the soil, the climatic conditions, the methods of preparation, or whatever the cause or causes may be, has again approached very closely to the *criollo* or old red type again. To such an extent has this taken place that for a long time I, as well as others, ascribed the darkening of the beans to hybridization and not to a complete volt fact in the kind planted, as seems to have taken place.

Those interested in the subject should refer to Sir Louis de Verteuil's (Count de Verteuil) account of the trouble either in the original book, p. 241 of the second edition, of 1884, or in Hart's "Cacao," p. 8,

or elsewhere. "None of the pods came to maturity but dried up." This was in 1727. "Thirty years later," Count de Verteuil continues, "some Aragonese Capuchin fathers were successful in their attempt to revive the culture of cacao in the island. They imported from the Continent a new variety, the *Cacao forastero*, which, though giving a product of inferior quality, was nevertheless promptly propagated as being hardier." The total output in those days must have been very small, for even seventy-five years later, that is, in 1799, Trinidad is said to have produced only 258,390 lb. in all, against 284,170 lb. in A.D. 1800. Now, nearly 200 years after the blast or blight ruined the first creole trees, the output is in bags, what it was in 1800 in lb. only. What, therefore, could it have been in 1727?

Now that we are all so busy reconstructing production and commerce within the Empire, it will be wise for producing centres to exchange detailed statistics and so learn more from, as well as of, each other in future than we have, any of us, known in the past. Such knowledge can do no harm to compile and pass on, whilst the statistics received in return will do all the centres, and therefore the Empire as a whole, much good. We often think we know everything, and then one day receive the shock of our lives, to find out that we have been busy nursing up entirely erroneous views for months past. A regular exchange of statistics, therefore, say once a year, as well as of news, views and methods, would probably do us all good in the days to come. I have always followed statistics very closely, and yet at times arrive at quite wrong conclusions. Others, therefore, may fall into the same trap, but at times like the present the fewer mistakes that are made the better, especially as the remedy needed is so simple.

To begin with, study the report from the Gold Coast referred to last month, p. 119; as we then said, there is much information in it, and the more we make use of it the better we like it. Now Sir Hugh Clifford has gone to Nigeria and made way for General Guggisberg, D.S.O., still best known to some as Miss Decima Moore's husband, in spite of the useful work he has done and which has made him so prominent a figure "off his own bat." Placed in the right groove by Sir Hugh, and now to be guided by this able Governor who knows West Africa so well, bright days are ahead for West Africa.

Some little time ago—very soon after the Armistice was signed—I believe I reported receipt of a letter from a "friendly German" offering to shake hands and allow bygones to be bygones, whilst expressing the hope that the little war just over would not prevent a renewal of our friendly business relations prior to the outbreak of hostilities. That letter still remains unanswered, and so will the following from a double-dealing Dutchman, who writes: "I herewith beg to inform you that, being the confidential firm for German and Austrian official Government concerns, I am regularly open to place orders for cocoa. You will be aware that we are specially aiming to obtain large quantities at lowest prices; nevertheless, smaller quantities can also have interest."

IF (in thick letters) this firm or any other of its

ilk is able to buy cocoa through this circular letter, I sincerely hope they will have to pay "through the nose" for it, and not buy it "at lowest prices." Of course, Germany wants to buy cheap. She has cost us dear, and still wants to fleece us, knowing full well that there are many who are always ready to "pity the poor Germans." We trust no member of the raw cocoa trade are included in this category.*

Far from picking up cocoa for export cheap, I am more than ever of opinion that London will, for a good time ahead, prove one of the best markets, and probably the very best, to consign cocoa to that is eligible for export, leaving the moiety behind to satisfy the wants of the home trade. Now that Gold Coast grades have reached 110s., when there is so much on this side, maybe not of that particular quality, London certainly deserves a pat on the back from planters for scooping in the dollars to make up for the lean times so many producers had whilst the war was on and shipping costly and uncertain.

During the week ending July 26th London received 25,424 bags of cocoa, including 14,364 from West Africa and 8,700 from the West Indies; as the deliveries only ran into 5,000 bags, the stock increased to 136,713 bags. The next week, ending August 2nd, saw 12,431 bags cleared, leaving the stock at 143,299 bags. On August 9th the figures were as under:—

By August 16th the figures for this year had been increased to 153,143 bags and London received another 7,300 West Indian against 11 bags of Accras.

London Stock, August, 9th—	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	37,638	9,066	28,182	29,257
Grenadas ...	17,519	14,105	29,563	17,275
Other W.I. ...	5,155	4,188	27,139	15,884
British African ...	47,887	33,655	58,073	38,129
Portuguese African ...	6,832	2,874	15,090	24,932
Cameroons ...	3,093	3,154	13,553	2,297
Ceylon and Java ...	7,815	16,211	38,800	33,043
Guayaquils ...	16,099	20,895	49,847	35,128
Bahia and Brazil ...	986	3,377	7,454	12,849
Other foreign ...	8,501	7,130	8,955	11,646
Totals ...	151,525	114,655	276,656	220,440

No sales were held on August 5th, as that was Bank Holiday Tuesday, and in the concluding paragraph I give news up to the time of going to press. At present I will say that August started with sales that included over a thousand bags of Trinidads at 126s. and 127s., a good lot of Grenadas at 118s. to 126s., about 4,000 West Africans at 83s. to 95s. for home use, and at 103s. to 105s. for export. San Thomé had been sold at 120s., which was either cheap or the quality not the best, for superior Bahias were, I believe, at times valued alongside Grenadas. Arriba Guayaquil was selling at 136s., and Cameroons had moved up from 110s. to 115s. Good, bold Ceylon fetched 165s. to 167s. 6d., and a parcel of seven bags "Nicaraguan" Ceylon, after being "put in" at the sales at 150s., finally sold at 193s. 6d.

* Here is another letter just in, dated Hamburg, March 1919, but only just to hand. "In view of the termination of the deplorable European War, I beg to advise that I have resumed business at the above address and trust to be favoured with your inquiries pertaining to Import and Export business at any time. First class references here and in London are at my disposal." The "deplorable" war is rather amusing; since the Germans lost, of course it could be nothing else,

I have been much interested in Ceylon and its exports, especially those to the Philippines. Why do Ceylons go to the Philippines? Have they a factory out there? If so, does it only use Ceylons? In that case I would like to have a sample of the manufactured article. Here are the figures of Ceylon's exports for the first half of the year, taken from the table of the *Times of Ceylon*:—

Ceylon Exports

To	1919 Cwt.	1918 Cwt.
U. K. ...	6,155	712
Australasia and New Zealand ...	2,412	12,706
U. S. A. ...	5,267	5,283
Canada &c. ...	1,695	1,595
Philippines ...	10,944	20,525
Japan ...	606	1,242
Elsewhere ...	821	419
Totals ...	27,900	45,452

Writing from Ecuador on July 3rd, Mr. Rorer of the Trinidad Department of Agriculture, said that the movement of cocoa in Ecuador, and especially in Guayaquil City, had slowed up a good deal, but more had been coming down to the port in the past few days, as the crop in some parts was just beginning. To the end of June the receipts were ahead of last year, as the following figures show:—

Kind	June 16—30 1919 Quintals (of 100 lb. or 46 kgs.)	1918 Jan. 1st.—June 30th. 1918
Arriba ...	22,216	24,857
Balao ...	2,368	4,446
Machala ...	614	266
Total ...	25,198	29,569
		454,780
		429,091

"It seems likely that the Ecuador crop this year will be an average one, perhaps a little short. This shortage is partially due to disease, but also, a fact which is not as fully realized as it ought to be, to the trees getting older each year, and there are not many young plantations coming into bearing to take their place."

This latter statement is worthy of attention. Every dog has its day, but we hope that it will be a long day yet before Guayaquil cocoa become noticeably inclined to follow the journey "out West" that the choice criollo centres seem determined to make their industries journey along. What will the manufacturers have to say on this point? We know that nothing lasts for ever in this world, but . . . there is time to pull up surely. Are there only to be "plebs" left in the world, both to "boss" us, and as the raw material for our food?

I have not yet received Messrs. F. Stevenson and Co.'s figures of the Bahia movements, but according to *Wileman's Brazilian Review*, between January 1st and July 5th Rio had exported 11,793 bags, and Bahia 463,415, making 475,208 bags in all, as compared with 284,535 bags only in 1918. There is no doubt that heavy stocks must have been on hand in Bahia at the end of April. The maximum estimate of 300,000 bags cannot be far out of the way, for the May shipments were heavy, and, with June, needed a big stock to draw on, for receipts have been light,

Two boats have just arrived from Jamaica with 7,250 bags between them, and the market is sitting up watching how long, in the present congested state of the docks, it will take for the cocoa to be worked and sold.

The Havre stock at the end of July showed an increase of 55,000 bags over that at the end of June, with 73,000 bags waiting to be cleared. What has become, therefore, of the balance of the 233,000 bags that was lying off Havre at the end of June, when the landed accumulations amounted to 283,400 bags, can only be conjectured.

Havre Stock, July 31st—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	3,188	161 to 180	1,485	147 to 150
Bahia ...	46,435	165 „ 185	7,529	136 „ 146
Venezuela ...	11,566	191 „ 235	7,810	145 „ 175
Trinidad ...	28,366	188 „ 192	16,450	146 „ 152
Grenada and O.W.I.	3,400	170 „ 185	13	142 „ 149
San Thomé ...	4	170 „ 180	567	136 „ 145
San Domingo ...	4,291	140 „ 160	469	128 „ 140
Haiti ...	15,169	138 „ 157	1,466	128 „ 140
Accras, &c. ...	120,406	140 „ 150	1,891	128 „ 135
Guayaquil ...	102,532	174 „ 180	8,181	145 „ 155
Others ...	2,678	—	6,235	—
Totals ..	338,035 bags		52,096 bags	

The biggest receipts which amounted to 84,999 bags, were 28,486 Accras, 19,144 Guayaquil's, 10,383 Bahia and 13,771 bags of Trinidads. The deliveries amounted to 30,369 bags. Of the 73,000 bags waiting to be landed, if they are not diverted elsewhere, are 29,840 Bahias.

News of stocks at Bordeaux seem difficult to obtain. The French figures generally are much out of date, there being none since the end of May when all France had a stock of 23,500 tons (of 1,000 Kos.) against 32,248 tons last year. Of this year's accumulations, Havre had 11,234 tons, Bordeaux 5,011, and Paris 4,746 tons. The French consumption does not, apparently, change much. Deliveries for consumption during the five months January-May, this year, amounted to 17,921 tons, against 16,632 last year and 17,394 tons (all of 1,000 Kos.) in 1917.

Lisbon received just three times as much cocoa as she delivered during July, say:—

Lisbon Movements, —

	Bags.
Stock on June 30th ...	148,532
Landed in July ...	101,785
Makes ...	250,317
Less delivered in July ...	36,343
Leaves a stock on July 31st, 1919 ...	213,974
Against „ „ 1918 ...	144,983

Inability to get up samples prevented public sales taking place on August 12th, but further substantial sales had been made at 126s. and 127s. for Trinidads, 120s. for San Thomé, and up to 110s. for fine West Africans. At the sales on August 19th, Trinidads touched 128s. 6d., Grenadas 126s. 6d., St. Lucias 127s. 6d., good Jamaicas 123s., Uganda good, boldish 101s. 6d., fair Costa Rica 115s., Maranham of a sort 105s., fine Ceylons are worth 170s., but received lower bids so were withdrawn.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 9.]

SEPTEMBER, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
Hamel Lewis Smith	137
The Fermentation of Philippine Cacao. Part II. By Harvey C. Brill	138
How to get rid of Thrips. No. III.—Thrips of Economic Importance in Trinidad	141
Sisal for Selling. No. XII.—Sisal Machinery.—Messrs. Robey and Co. Ltd., of Lincoln	143
"Tropical Life" Friend. No. 171	144
The Bulletin of the London Rubber Growers' Association	145
Shipping Coco-nut Oil in Bulk	146
The Statist on the British in India	146
Filter Cloths and how to Wash Them	147
Review—The Preparation and Vulcanization of Para Rubber	147
High Costs and the Restricted Output in the U.K.	148
Trade, Politics and Finance	148
The London Cocoa Market	150

Hamel Lewis Smith.

SINCE our last appearance, the father of our Editor passed away at his house in Croydon just two months after completing his ninetieth birthday. Born in 1829, and educated in London and Paris, Hamel Lewis Smith (generally shortened into Hamel Smith or Don Hamel among the Latins who dislike having to pronounce "th" and so dropped the name Smith altogether) grew up amidst a strange medley of men, students for the medical and legal professions, artists, singers, actors, and others, until the death of his father recalled him to London, and finally forced him to give up medicine, and from that day and onwards, he turned all his attention to studying the development and progress of tropical commerce and agriculture, chiefly cane-sugar production in the tropics. During the process he absorbed an amount of knowledge concerning the peoples, the crops, and the industries of Europe and the Tropics that was truly wonderful, and yet he never seemed to realize how much he knew, and how useful his practical experience could be as a guide to others. Only in casual conversations or by round-about methods could you extract what you wanted, and not always then. His knowledge was solid in more ways than one, it needed a pick-axe to dig it out.

Cosmopolitan to a considerable degree, although it was only in the nineties that he visited Germany, Mr. Hamel Smith watched the perfecting of the telegraph, submarine cables, and also of the use of steam on land and water. He must have crossed the Atlantic going and returning to the West Indies or South America, between seventy and eighty times so had every opportunity of doing so. Men of his generation complained bitterly of these speeding-up innovations and said that they knocked all the romance out of business. This was true, but what would those men say now of wireless messages and aerial transport.

Ninety years covers a long period; it enabled the man who has just passed away to stand up in 1848, as a boy of nineteen, in the medical schools of Paris and listen to the lectures of men who were as old as himself when they had to live through the horrors of the French Revolution of '93. Fifty-seven years later, his son stood up in 1905, also in Paris, at the Institut Pasteur and listened to that master-mind, Professor Laveran tell his audience of the recent discoveries concerning mosquitoes and malaria and its prevention, whilst Dr. Roux held up bottles of specimens, or pointed to diagrams and statements on the blackboard.

Those who are not indifferent to the needs of the tropics and of those who live and labour within their boundaries, should grow up with men like the one who has now crossed the bourne. They would then realize

that men who have absorbed experience, may, like the dry-as-dusts of old, have to be trained to realize their own utility and especially to realize that others should know what they can teach them so as to be able to pass on the torch of knowledge; otherwise when the light goes out, we are left to grope in darkness over many points that could have been explained. In the past we have made mistakes that could have been avoided had these links of the past been welded on to those who were passing or had yet to come. When we get our agricultural colleges in the tropics such blunders will become far less common than they have been in the past. Students and the atmosphere of a college, the comparison of present new-fangled methods with old-time experiences will make the most clam-like natures come out of their shells if only to adversely criticize and compare the new with the old, but in doing so we can, if we wish, learn where the old brigade were right and where we, with all our care and knowledge, may go wrong.

The Fermentation of Philippine Cacao.*

By HARVEY C. BRILL.

PART II.

(From the Laboratory of Organic Chemistry, Bureau of Science, Manila.)

Comparing this increase in consumption, which in each case is practically double the increase in production, with the increase in production, it is at once apparent that the production is lagging behind. In other words, the present cacao-growing countries must increase their production more rapidly than they have been doing and new fields must be developed, or the rate of increase in consumption will decline. This disparity in increase of production and consumption cannot continue without an effect on the selling price. A rise in the selling price will lessen the sales and encourage interest in the cultivation. Reasoning in this manner, the growing of cacao on a large scale would appear to be a profitable venture for the Philippine Islands to attempt.

Very few localities in the Philippine Islands at the present time produce enough cacao for local consumption. Pampanga and Iloilo Provinces are the most important exceptions. The former reports the presence of five thousand cacao trees in the vicinity of Mexico alone. The cacao raised in this region is of good quality and appearance, and compares favourably with that grown elsewhere. Two varieties are grown, criollo and a very fair quality of forastero. The average weight of the fruit and the percentage of the seeds in the criollo is considerably greater than for the forastero.† This is accounted for by the fact

that more careful selection has been made of this variety for planting. The forastero is much more common and less difficult to obtain. The planting of criollo should be encouraged.

The samples of cacao discussed in these tables were fermented by placing the wet beans in beakers, at the top and bottom of which were layers of cotton to retain the juices given off when the beans underwent fermentation and to prevent the too rapid escape of the moisture from the beaker. Twice daily the beans were removed from the beakers and carefully stirred in order that they might ferment uniformly and that they might come in contact with the air. They were kept in an incubator at a temperature of 37.5° C. This was necessary, since the small bulk of seeds allowed the heat from the fermentation to escape so rapidly that, if left in the open air, the fermentation would have been incomplete. Under these conditions the highest temperature reached by any of the samples was 45° C. The criollo fermented much more rapidly than the forastero. Active fermentation was practically complete at the end of four days, and a considerably finer product resulted, judging by the odour, colour, and other organoleptic properties. More difficulty was experienced in fermenting forastero. The fermentation proceeded considerably more slowly, and the temperature did not rise high enough to kill the germ of the seeds in all cases; consequently there was a tendency to sprout. In larger masses of the beans the temperature would be destroyed, but the above tendency illustrates the difference in the speed of fermentation of the two under the conditions of the experiment.

(a) Samples C-6-y and F-6-7† were sterilized by heating in hot water until the germ was killed and the activity of the enzymes destroyed. When the samples had become cool yeast was added, and they were incubated.

(b) The treatment of samples C-6-TD and F-6-TD was identical in all respects with that of samples C-6-y and F-6-7, except that taka-diastase was added instead of yeast.

(c) Sample C-6-y-S had yeast added, but it was not sterilized.

(d) Sample C-6-TD-S had taka-diastase added, but it was not sterilized.

(e) Samples C-7-C and F-7-C had chloroform placed on the sterile cotton covering to prevent the introduction of yeast and of bacteria. From time to time additional amounts of chloroform were added to take the place of the volatilized portion.

(f) Samples C-7-T and F-7-T had toluene added instead of chloroform. The subsequent treatment was identical with that of samples C-7-C and F-7-C.

(g) Samples C-7-A and F-7-A had alcohol added instead of chloroform or toluene. The subsequent treatment was identical with that indicated in paragraphs "e" and "f."

Table V carries some further analytical data in regard to these samples of cacao. All these results are calculated on the basis of the water-free product in order that they may be directly comparable with

* Received for publication November 17th, 1916, and published in the *Philippine Journal of Science*, vol. xii, No. 1, for January, 1917.

† This surely is exceptional. We have always found that the *criollo* trees gave fewer pods, fewer beans to the pod, that the beans were much lighter than those from the *forastero* trees. At the same time, as reported on p. 134 in the August Cocoa Market Report, Ceylon seems to be receiving a big weight yield per acre. The data in Table IV illustrate some fermentation experiments with these two varieties of cacao. These can be seen in the original article, which unfortunately we have not the room to give here.—ED., T.L.

‡ See tables in the original article.—ED., T.L.

each other and with the results listed in Table VI. All results were obtained from the shelled seeds. These tables also have had to be omitted.

DISCUSSION.

The loss in weight due to fermentation is given in Table IV. The criollo has the greater percentage of loss from fermentation. This is more apparent because the fermentation of the criollo was more nearly complete than the fermentation of the forastero. If perfect fermentation could be induced in the latter, the loss in it would undoubtedly approach that for criollo. However, a difference in the selling price of the fermented products would be made in favour of the criollo because of its superior quality, and this would still allow more profit to be made from the cultivation of the criollo than from that of the forastero. § Then, too, the latter, because of its slowness in fermenting, is in greater danger of being spoiled by moulding or by sprouting than is the former, and losses from this cause would be more apt to occur. On the other hand, the criollo samples examined had a larger average weight for the fruit, 531 grm., and a higher average yield of seeds, 27.9 per cent, than the forastero, which had an average weight of 481 grm. and an average yield of 24.6 per cent. of seeds. This would make the yields of dry, shelled seeds compare, criollo to forastero, as 1,089 to 1,066; consequently, regardless of a difference in price in favour of criollo, the profit from its cultivation would be greater than from the cultivation of forastero, since the absolute yield of dry, shelled seeds, or nibs, is greater from the criollo than from the forastero.

The greater rapidity of the fermentation of the criollo is demonstrated by the loss in weight due to the fermentation. The maximum loss in weight has been reached at the end of the fourth day, while the forastero shows a maximum at the end of the sixth day. The intensity of the fermentation is likewise demonstrated by these same figures, for criollo shows a maximum of 8.5 per cent. and forastero a maximum of 3.8 per cent. The changes effected by fermentation should be much less in the case of the latter, judged by the change in weight, and this is borne out by the less agreeable odour of the defatted|| cacao and the cacao butter. The odour is most pleasant between the third and fourth days for the cacao butter and about the fourth day for the defatted cacao in the case of the criollo type, while the fifth and sixth days for the cacao butter and the fifth and sixth days for the defatted cacao show the finest flavoured product in the case of the forastero. But the product of this longer fermentation period for forastero does not equal that from criollo in quality.

The changes brought about by fermentation are hard to demonstrate by an analysis of the finished cacao. The changes are largely characterized by an improvement in its organoleptic properties. Bainbridge and Davies¶ believe that an essential oil is produced during

fermentation. In their investigation on fermented arriba from Ecuador, they obtained 24 grm. of an essential oil from 2,000 kilograms of cacao. Ordinary analytical chemical methods would not suffice for the detection of so minute quantities. The theobromine shows no regular variation. Sack* claims that one of the results of fermentation is the splitting of a glucoside with the formation of theobromine and cacao-red. The results obtained in this investigation do not corroborate his conclusions.

The glucose and sucrose content change with the degree of fermentation, the latter in several cases being zero, while the former first decreases and then shows a slight increase. This increase is due to the action of diastase on the starch. The sugar usually listed as glucose in the analysis of fermented cacao is doubtless largely maltose, the product of the action of diastase on the starch. The percentage of starch does not undergo a decisive change. The apparently smaller amount in C—U and F—U is partly accounted for by the fact that these samples have not lost juices through fermentation. I believe a change has taken place in the character of the starch by the fermentation, and that this makes itself apparent in the so-called break of fermented cacao.

A change in the percentage of astringent matter with length of fermentation is the most apparent change that can be demonstrated by analytical data. The amount decreases with the length of fermentation and accounts for part of the improvement in the flavour of the product. The superiority of the criollo over the forastero is apparent when a comparison is made of the quantities of astringent matters present in the two.

The difference in the cellulose content of the fermented and unfermented samples can be explained by the fact that the former has lost juices by fermentation, while the latter still retains these. The same explanation holds for the difference in extractive matter. Van Hall† states that good cacao should show 12 per cent. or more extractive matter. The Philippine product averages slightly more than this.

The free acidity of the cacao butter increases with the duration of the fermentation. Criollo is superior to forastero in this respect also. In spite of the greater intensity of the fermentation, it shows less free acidity than does forastero, the ratio being 0.26 cubic centimetre to 0.90 cubic centimetre 0.1 N alkali, respectively. The slight change in the acidity of the cacao butter with the greater length of fermentation is confirmatory of the conclusion reached by me‡ that Philippine cacao does not contain a lipase.

For the purpose of making a further investigation of the fermentation processes, certain special samples were prepared. These are described on p. 8. An extended discussion of these samples is hardly necessary, since in no case is the quality of the final product equal to that obtained by the use of the ordinary methods. Samples C—6—y and F—6—y had yeast added to them after they had first been sterilized to destroy the activity of the enzymes. In the sterilization of the seeds care was taken to prevent cooking

§ This is doubtful elsewhere than in the Philippines, as the greater trouble with the more delicate *criollo* and the poorer yields have made planters give up *criollo* for the hardier and much more prolific *forastero*.—ED., T.L.

By defatted cacao is here meant cacao from which all the fat has been etherized.

¶ Loc. cit.

* Bull. Dept. Agr. Surinam,

† Loc. cit.

‡ Loc. cit.

and at the same time effectively to sterilize. The final product did not equal C-6 or F-6 in excellence of odour, colour, or break. It would appear that yeasts alone do not produce the desired changes. Bainbridge and Davies§ make the statement that wild yeasts from the pods and stems first act on the pulp, and that in the latter stages of fermentation their place is taken by true yeasts. The terms wild yeast and true yeast as used by these authorities are rather confusing. I do not believe the yeasts alone account for the changes cacao undergoes when it ferments, and the above results corroborate my belief. The yeast used for inoculation was the yeast found growing on the cacao; consequently no error could have arisen from a choice of the wrong yeast.

For purposes of comparison and control, C-6-TD, C-6-TD-S, C-6-y-S, F-6-TD, F-6-TD-S, and F-6-y-S were run. These were no better than, and in some cases not so good as, C-6-y and F-6-y; therefore they add weight to the above conclusion that yeast is not solely responsible for the fermentation changes of cacao.

To determine, if possible, the influence of the enzymes on the cacao, samples C-7-C, C-7-T, C-7-A, F-7-C, F-7-T, and F-7-A were prepared. Extreme care was taken to prevent inoculation of the seeds when the pods were opened and the seeds removed. In this endeavour I was successful, since at no time was any alcoholic or acetic acid fermentation apparent. These samples were examined in the same manner as the preceding. The quality of the cacao was better than that produced by the action of yeast and taka-diastase in the absence of the enzymes, but the odour was not so fine as C-6 in the case of the criollo samples so treated, nor so fine as F-6 in the case of the forastero samples. Judging by these results, it would appear that the enzymes already existing in the cacao alone do not bring about all the desired changes, but that their influence must be reinforced by the enzymes from yeasts and possibly from bacteria or moulds. The superiority or the peculiarity of certain cacaos is probably largely due to the presence of certain yeasts or moulds during the fermentation process. It is instructive to cite the belief of Preyer|| in this regard. He has isolated a yeast, *Saccharomyces theobromæ*, from fermenting cacao. He recommends its use in the initiation of the fermenting process. The use of a pure culture yeast would necessitate extreme care in handling to prevent inoculation of the cacao with wild yeasts until the yeasts used for inoculation had attained a good growth. It would be impossible to sterilize the seeds, since such treatment would likewise destroy the enzymes, and the resulting product from enzyme-free cacao would not be satisfactory. The seeds as they exist in the pod are free from yeasts and bacteria, but to handle them in such a manner as to prevent contamination is hardly practicable. However, care in fermentation will yield a good grade of material provided the initial product is high class, so there is no cause for disconsolation because of the apparent impracticability of using pure cultures of yeast.

§ Loc. cit.

Preyer, A., in "The Fermentation of Cacao," TROPICAL LIFE Publishing Department.

SUMMARY.

Philippine cacao is compared with foreign cacaos.

A study is made of criollo and forastero cacao fermented under varying lengths of time, and the respective influence of the enzymes and of yeast is investigated.

The conclusion is reached that the Philippine Islands can grow a good quality of cacao in large quantities, and that the time seems opportune for such an innovation. The investigation leads to the belief that the fermentation is the joint result of the reaction of yeasts and of enzymes.

WE regret to hear through the columns of several of our Eastern contemporaries of the death of Mr. R. W. Munro, the well-known planters' visiting agent and one of the safest authorities on tropical planting, especially rubber and coco-nuts. Manager of Gadong Estate, Banting, Selangor, Mr. Munro had the distinction of being one of the oldest, if not actually the oldest European resident in his district. He was a pioneer in the coco-nut planting industry, in which he was interested long before rubber came to Malaya, and was co-author, it will be remembered, with Mr. L. C. Brown of the book, which we had the pleasure of publishing in London, "A Practical Guide to Coco-nut Planting," a publication which has only been exceeded in popularity by the personality of the deceased. When the history of the coco-nut industry in the East is written, the name of R. W. Munro will occupy a prominent position among those who have helped to place it on a sure foundation.

ACCORDING to the *Board of Trade Journal*, the proposal to make Manila the chief town in the Philippines, a "free shipping zone" has rather dragged. The idea of such a change lies in the hope of making an emporium or entrepot at Manila for American goods to all parts of the Far East and India. Doing so will tend to cut out or at least to cut into Hong-Kong and Shanghai and not do over much good to Singapore. Expert authorities, however, have warned those in favour of the scheme that the Port of Manila is, in every way, worthy of its ex-Spanish owners in being at least 150 years out of date. If our own ports, therefore, keep themselves up-to-date they ought still to be able to hold their own. One day, when three Sundays come in a week, we shall do with Trinidad in the West Indies which is fairly up-to-date what the go-ahead Americans want to see done with Manila. When we do get those three Sundays and Trinidad is made the Hong-Kong of the West, the advantages of this Empire, commercially, strategically and politically, will surprise everyone, and we shall all want to blame the British Lion for not having brought about the change years ago.

Wanted.—Position as Storekeeper or Manager on Plantation. Ten years' tropical experience, thoroughly used to handling natives. First-class references. Apply "J. H., Africa," c/o TROPICAL LIFE.

How to get Rid of Thrips.—No. III.

THRIPS OF ECONOMIC IMPORTANCE IN TRINIDAD.*

By C. B. WILLIAMS, M.A., F.E.S.

(Continued from August issue, p. 126.)

THRIPS are a group of minute insects, the largest of which is barely one-third of an inch long, while the more usual kinds seen in this island are little more than a twelfth of an inch. They are brown or yellow in colour, narrow bodied, and, in the adult stage, usually with two pairs of feather-like wings, which lie along the body when at rest, and are inconspicuous except when banded with dark and light. The younger stages are wingless, usually yellow in colour with occasional red markings or banded with red and white.

The thrips that come to the notice of the agriculturist are generally those which feed upon plant juices and destroy the leaves and fruit of cultivated plants. Some of these make up in numbers what they lack in size and cause considerable damage. The best known example in this island is the *Cacao Thrips* or Red-banded Thrips (*Selenothrips rubrocinctus*), which is one of the most serious pests of cacao in the West Indies. Although the greater number of thrips are plant feeders, there are others which are predaceous and might be classed as useful insects. Attention will be drawn below to two thrips common in this island, both of which are predators, and are known to feed occasionally, at least, on the young of the cacao thrips. Another thrips (*Haplothrips* sp.) was found in Demerara and Panama to feed on the eggs of froghoppers; while others in different parts of the world have been recorded as feeding on mites, "red-spiders," and scale insects. One Trinidad thrips has even been seen to suck blood.

Between seventy and eighty different species of thrips have been collected in Trinidad, chiefly by Mr. Urich and myself in the last three years, and these are being studied as rapidly as present circumstances permit. The greater number, however, are of no immediate economic importance, and the notes below are confined to those which are known to be either definitely injurious, definitely beneficial, or liable to be confused with the above.

Franklinothrips vespiformis, Crawford.

This thrips is an active long-legged, somewhat large ant-like insect, with banded black and white wings, and a white band at the base of the abdomen.† It is largely, if not entirely, predaceous, and is found on the leaves of various plants, where it feeds on smaller insects and their young. It has been seen to feed on the young of the cacao thrips. The prey is pierced with its pointed beak, the juices sucked out, and the empty skin discarded.

It is not uncommon on leaves of cacao among the

adults and nymphs of the cacao thrips, and may be distinguished from these by its larger size, active ant-like appearance and banded wings.

The nymph (young) of this thrips is also predaceous and may be found on leaves infested with cacao thrips. It is bright vermilion in colour with three pale yellowish bands near the tip of the abdomen, and should not be confused with the red-banded nymph of the cacao thrips, which is more sluggish and has a single narrow red band round the middle of the abdomen.

It has been found so far on the leaves of guava (*Psidium guajava*), sweet potato (*Ipomoea batatas*), cacao (*Theobroma cacao*), bamboo (*Bambusa vulgaris*), *Lantana camara*, and on grass and various low shrubs.

It is generally common throughout the West Indies and Central America.

Franklinothrips tenuicornis, Hood.

This thrips is, in the adult stage, extremely similar to the above. The two can be distinguished most readily by the fact that the antennæ of *F. tenuicornis* are more slender and have the basal four segments yellow, while in *F. vespiformis* the antennæ are a little stouter and have only the three basal joints yellow.

The nymph of *F. tenuicornis* is yellow, with a broad vermilion band on the abdomen from segments one to six and a narrow band near the tip of segment nine. This coloration distinguishes it immediately from the nymphs of the previous species and of the cacao thrips.

In habits it is identical with *F. vespiformis* so far as is known, but it is rarer and more restricted in range.

It has been found in Trinidad on leaves of pois doux (*Inga* spp.), cacao, *Hibiscus rosa sinensis*, and morning glory (*Ipomoea* sp.).

Abroad it is only known from Panama.

Heliothrips hæmorrhoidalis, Bouche.

This thrips is closely related to the cacao thrips both in structure and in habits, and the two species may be found living together on the same leaf. *H. hæmorrhoidalis* may be distinguished by the dark reddish brown body, pale wings and yellow legs. It is one of the most widely distributed thrips in the world, being known from every continent. In Europe and North America it is a serious pest in greenhouses, and is known as the "greenhouse thrips."

In Trinidad it is most frequent on leaves of cacao and coffee, but is never common enough to be a serious pest. I have also seen it damaging the leaves of cotton. It is found only on leaves, and never in the flowers of the cacao or any other plant.

It has been found on the leaves of cacao, guava, cotton (*Gossypium* sp.), camphor (*Cinnamomum camphora*), Pomme de liane (*Passiflora laurifolia*), coffee (*Coffea arabica*), eucalyptus in Australia, fiddle-wood (*Citharexylum fruticosum*), kola (*Cola acuminata*) in St. Vincent, date palm (*Phoenix dactylifera*) in Barbados, mango (*Mangifera indica*), coconut (*Cocos nucifera*), hog plum (*Spondias lutea*), and in Europe on ferns in greenhouses.

* Reprinted from the *Bulletin* of the Agricultural Society of Trinidad.

† In the original notes five figures, enlarged many times, are included and, of course, would be very useful for purposes of identification. See *Bulletin*, part 3, vol. xvii. of 1918, end of page 146. Ed., T.L.

Selenothrips [Heliothrips] rubrocinctus, Giard.

The Cacao thrips or the Red-banded thrips.—This is the only seriously injurious thrips in the West Indies. Full particulars of its life-history are given Mr. F. W. Urich, in a *Circular* of the Board of Agriculture (1911). It is entirely a leaf inhabiting insect, and is only found by accident and very rarely in flowers. The thrips in the flowers of the bois immortelle (*Erythrina*) used as shade for the cacao, and even those found occasionally in the flowers of the cacao are both quite distinct from the cacao thrips.

No efficient natural enemies are known at present. A fungus (*Sporotrichum globulosum*) has been recorded as attacking it in St. Vincent (Nowell, *Agricultural News*, Barbados XV, 1916, 110), and I found in Panama a distinct but somewhat similar fungus destroying both young and adults. In Guadeloupe an ant (*Wasmannia auropunctata*, Roger) was seen carrying off young cacao thrips in its jaws, and the larvæ are also destroyed by the two predaceous species of *Frankliniopsis*, as mentioned above, and by small predaceous bugs (*Reduviidae*).

It has been found on leaves of cacao, guava, mango, camphor, pois doux (*Inga*, spp.), live oak (*Quercus virginiana*) in Florida, croton (*Codiaeum variegatum*), cashew (*Anacardium occidentale*), kola, grape vine (*Vitis vinifera*), "almond" (*Terminalia catappa*), pomme rose (*Eugenia jambos*), *Sponia micrantha*.

It is known from practically all the West Indian Islands, from United States of America, British Guiana, Surinam, Panama, Costa Rica, Brazil, and Mauritius.

Mr. Rorer in a recent visit to the cacao districts of Ecuador did not see a single specimen during nearly two months.

Corynothrips stenopterus, Williams.

The Cassava thrips.—A medium-sized yellowish green and brown thrips found commonly on the undersides of the leaves of cassava (*Manihot utilissima*) and rarely on papaya (*Carica papaya*). When common it causes the surface, particularly near the ribs, to be discoloured in irregular brownish patches, and the leaf may be curled or distorted.

The eggs are laid embedded in the mid-rib of the leaf on the underside, and all stages are passed on the leaf. The larva and pre-pupa are semi-transparent yellowish green, the pupa is paler with a reddish head, and shortly before emergence with the brown dorsal markings of the adult.

It has been found in Trinidad wherever cassava is found, and also Barbados, Grenada, St. Vincent, Tobago, British Guiana, Panama, and Costa Rica.

Frankliniella insularis, Franklin.

A very abundant small black thrips found in flowers of all kinds, but particularly in those of the leguminosæ. It is generally common in the flowers of the bois immortelle (*Erythrina glauca* and *E. micropteryx*), and is frequently confused with the cacao thrips. It may be immediately distinguished by the white band at the base of the wings, and by its narrower form and more active movements. The eggs are laid embedded in the petals and other parts of the flower of legumes (e.g., Lima beans), and the

yellow larva live chiefly on the flowers and young seed pods. In Europe a closely allied species descends into the ground to pupate, but nothing is yet known of the habits of this species.

It is occasionally sufficiently abundant in flowers of legumes to destroy the flowers and pods and in the cultivated varieties may be a source of loss, but in the cacao estates where it is most abundant it is quite harmless.

It has been found in the flowers of Lima bean (*Phaseolus* sp.), *Cassia* pois doux, (*Inga* spp.), *Lantana* spp., white wood (*Tecoma leucoxydon*), bois immortelle (*Erythrina* spp.), cannon ball tree (*Couroupita guianensis*), Hibiscus, rose (*Rosa*), pigeon peas (*Cajanus indicus*), papaya, flamboyant (*Poinciana regia*), bonaviste (*Dolichos* sp.), tobacco (*Nicotianum*), sweet potato (*Ipomoea batatas*), red pepper (*Capsicum* sp.), arrowroot (*Maranta* sp.), yam (*Dioscorea* spp.) and on Guinea grass (*Panicum maximum*) the last probably accidental. The species occurs throughout Central America and the West Indies.

Physothrips xanthius, Williams.

The Yellow Orchid Thrips. This is a small yellow thrips with black eyes and greyish wings which is found commonly on orchids, particularly *Cattleya*, in some localities and frequently does quite severe damage to the leaves. Both young and adults are found together on the leaves. It may be an introduced species as up to the present it has not been found on orchids growing wild.

Sedulothrips insolens, Bagnall.

This rather large thrips is often seen in cacao estates on the trunks of dead or dying trees. It is shining black in colour with red eyes.

It is extremely active and runs about rapidly in the direct sunshine. The young, which are banded red and white, are common in similar situations and walks slowly, swinging the body from side to side.

This species, which is sometimes thought to be injurious, is quite harmless and only appears after the death of the branch on which it lives. Little is known of its habits, but it appears to feed on small insects and possibly on fungi and their spores.

It is not at present known outside Trinidad.

THOSE, and the number is substantial we fear, who look upon the natives of India as limp and lethargic, and not the men of muscle and tissue that the fighting tribes and the hill races undoubtedly are, must have had their ideas rudely if pleasurably shaken when they saw the native soldiers take part in the Army athletic championship meeting which took place at Aldershot on August 29th and 30th. The high jump by a bare-footed Indian was "great," and his action as he cleared the tape certainly graceful, whilst Hav Fazl Ahmed (we trust the spelling is correct), of the 72nd Punjabis, showed no signs of limpness when starting for the 100 yards race; and Jamadar Lal Singh, who won the prize for "putting the shot," must be no weakling, but very much the other way inclined. Energy and muscle were very apparent among these troopers. It was pleasant to see, and left a pleasing memory behind.

Sisal for Selling.—No. XII.

(Continued from August issue, p. 127.)

SISAL MACHINERY—WHAT MESSRS. ROBEY & CO. LTD. CAN SUPPLY.

FOR a good many years past we have been in communication with Messrs. Robey & Co. Ltd., of Lincoln, over their Decorticating machines. In the last communication that we had from them were some extracts from letters they had received from Yucatan and East Africa relative to the popularity of their machines. At Merida in Yucatan, a machine installed in June, 1905, was running quite satisfactorily three years later, doing its 100,000 leaves a day and comparing favourably with the American machines. We noted this with pleasure as we had all along been told that the Americans completely dominated the Mexican production market, whereas now this position seems to have been successfully challenged by our friends at Lincoln.

It was the same in British East Africa where two and a-half tons were turned out easily in ten hours and even on occasion three tons during a long working day. Much depends of course, on the freshness and the state of maturity of the leaves. Half an hour will make all the difference in the skin or covering of the leaves which soon changes from its soft succulent state to an extremely tough one, requiring much trouble to remove especially without punishing the fibre too much. As an example of what can be done under ideal circumstances, a Robey machine at Kisumie, B.E.A., is reported to have turned out thirty bales or three tons of dried fibre in ten hours, with a record output of 150 bales—15 tons in fifty hours.

In a very attractive book on the subject of decorticating plant Messrs. Robey includes the following table of the

WORLD'S PRODUCTION OF HARD FIBRES IN 1915.

	Tons
Philippines, <i>Musa textilis</i> , Abacà or Manila fibre	140,000
Java	600
Mexico, <i>Agave rigida</i> var <i>sisalana</i>	135,000
Elsewhere	42,375
Total	317,975

This is exclusive of German East Africa which in 1913, the year before the war was started, exported 20,000 tons of sisal. In 1916, the Philippines we are told produced rather more than above, say 157,950 tons which increased to 182,885 in 1917.

Since this firm first started to turn out decorticating machines in 1904, things in the fibre producing world have not altogether stood still although they have moved slowly in comparison with rubber, sugar and other machinery, but Messrs. Robey have not been idle, they at least have not moved slowly and have been busy all this time, one year longer than TROPICAL LIFE has been in existence, studying the needs of the fibre producers and adapting their machines so as to meet these needs until to day they claim to be in the position of supplying the whole of the plant required by the most up-to-date estate in existence. Their brochure under review gives exhaustive particulars of these machines which includes: The Decorticating Machine, with its motive power,

Crushing Rolls for specially hard or thick leaves, Brushing Machines, Baling Presses, Shaftings, Iron Buildings to house the above, Railway Track with Locos, Lines, Wagons, &c., Pumps for the Washing Tanks, and Weighing Machines.

Everything complete for an up-to-date estate.

The principal feature of the Decorticator seems to be the main feed chain, made of phosphor-bronze, thus doing away with rope troubles. This machine is provided with a conveyor table and chains which carry the leaves until they are gripped between the main feed chain and the underside of the first wheel. The sides of the frame are of cast-iron, very massive in design, whilst the drums, of cast iron, have special knives securely bolted to them and are provided with easily removable hinged covers. Further particulars are given in the book but we cannot give them here, they are however worth studying as we have so very few books on the subject. We can however say this: the firm has standardized on a one-size decorticator, as they have found such a machine fulfils all requirements and enables them to manufacture it at the lowest price, and also as the machines steadily pass out of their shops, it enables them to give quick delivery and when spare parts are needed they can be obtained from stock. In this case the machine is fitted with drums four to five feet in diameter, and has a capacity of 2½ to 3 tons of fibre per day of ten hours, according to the condition in the toughness of the leaves. To ensure these results at least 60 B.H.P. should be used and the machine with a 16ft. feeding table will require a floor space of about 29ft. 6in. by 8ft. 6in. wide. The machine when packed for shipping runs into 13—14 tons, with the heaviest part under 2 tons, and a cubic measurement of 1,120 feet.

The double-drum raspadors, the fibre-dressing and brushing machinery are also described and so are the baling presses, pumps and motive power. A line to the firm, Messrs. Robey & Co, Ltd., Lincoln, England (quite an easy address to remember), will bring all *bona fide* fibre growers, balers and exporters, a copy of the book.

If they are wise, they will send that note and ask for one, for now the war is over costs must be cut down and the quality of the fibre improved in every way possible, and this the book will help to do.

(To be continued.)

ATTENTION has been called in the columns of several of our contemporaries to the fact that a natural enemy of the coco-nut beetle (*Oryctes*) in the Philippines has been found by Mr. F. Warner in the island of Bohol. This is a flying lemur, *Galeopithecus* sp., which has been domesticated by the Filipinos, and bred, partly for the value of its skin, which is used for the making of hats, and partly for catching coco-nut beetles. This small animal is insectivorous and harmless, the only vegetation eaten by it being the leaves of the jak, *Artocarpus integrifolia*. Nothing is known of its breeding habits. Its flesh is said to be poisonous, which renders it unlikely to have many natural enemies, so that if it can be multiplied rapidly and if, as reported, it is of a non-roving disposition, it should prove of value in the control of the beetle.



"Tropical Life" Friend.—No. 171.

MRS. SAROJINI NAIDU.

WHATEVER may be the result of the Indian appeal to H.M. Privy Council in London with regard to the upset in the Punjab last April, and on whosever shoulders the blame finally rests, one cannot help feeling sorry that so large, wealthy and important an Empire as India is so little known to, and attracts so little—in fact no—attention among the bulk of people on this side. How many of us in the United Kingdom have even heard of the name of Sir Michael O'Dwyer? How many out of India's many millions do not know that name quite well? In both cases very few.

In these democratic days when we are told that secret treaties are to be things of the past, would it not also be to the greater ultimate good of all concerned if more space in our leading papers were devoted to, and more detailed reports published of all that goes on in India of such importance as to render necessary an appeal to Cæsar, in the shape of the Privy Council. The war has made "big politics" of international importance; any dispute therefore, in any portion of the Empire itself, that causes the disputants to appeal to the Privy Council, should be, and undoubtedly is, as important to the future welfare of us all, as any query will be that has to be left to the League of Nations to settle—when the League comes into existence. This being so, it is to be hoped that one will hear more of the good—or bad work being done in India that is likely to affect international labour, finance or trade generally. All, be it noted, practical items, for there is nothing psychological or sentimental about these three. India is not as prosperous as she should be and could be, yet the greater the prosperity of

India, the greater will be the prosperity of the Empire as a whole, and we all need that extra prosperity somewhat badly just now.

In economics, the same as in politics, we undoubtedly want to know more than we do of each other. We should like to see similar articles to the one by Dr. Barber in *The Times* on "Sugar Production in India," appear once a week in all the leading papers, India deserves such notices, so do the employers and employed in the United Kingdom, for what benefits India must benefit them and everyone else.

These and many other perplexing points were the cause of our having the pleasure of making the personal acquaintance of Mrs. Naidu. When we met there was no need to talk politics, the Punjab was not even mentioned, but on other occasions we have, not unnaturally compared notes on the claims (and what was hoped for from such claims) of the women of India to enjoy equal rights to the franchise that it is hoped will be included in any scheme of reform to inaugurate the responsible self-government of India.

"Of recent years" Mrs. Naidu claims, and if anyone has the right to speak on the subject it is "Our Friend," "the woman of the Indian renaissance, largely owing to the stimulus of the more vigorous Western ideas which they have slowly but surely absorbed, have once more vindicated themselves as not wholly unworthy of their high social and spiritual inheritance, and already they are beginning to recover their prerogatives as an integral part of the national life of India."

One thing is certain, Mrs. Naidu places politics and political life on a lofty but still eminently practical plane. Whatever has to be done, palatable or unpalatable, she would claim, let it be done with courtesy and tact on both sides, not in such a way as to make a discourteous Yes less acceptable than a tactful No. Remember that there are ethics as well as politics: that other people besides the Belgians have souls to be protected and admired.

However far above the average status of the women in India Mrs. Sarojini Naidu may be, her presence in our midst at the present time is more than a mere coincidence. We feel that we owe it to that national and international social upheaval now troubling this old earth of ours, after the military fever of which it is still feeling the effects, which has "cast" Mrs. Naidu on to our shores just when there is much to settle concerning India, and at a time when a woman's wit and keener insight, into minds as well as into matter, will be of great assistance. Her knowledge and experience of India is not exotic, she is of the country. All the will in the world—a will that at times which makes outsiders almost fanatical in their endeavours to be more Indian than the natives themselves—will never do to help those responsible for the well-being of India what this gifted visitor can without effort.

The daughter of Dr. Aghorenath Chattopadhyaya, and married to Dr. M. G. Naidu, principal medical adviser to the Nizam of Hyderabad, "Our Friend" was elected a Fellow of the Royal Society of Literature in 1914. After her earlier education in India, she passed through King's College London to Girton at Cambridge, and then travelled on the Continent. Her poetry is well known to all lovers of literature and a good many others as well, for published in English her poems have been reproduced in several other European languages.

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

SEPTEMBER, 1919.

The Bulletin of the London Rubber Growers' Association.

WE have to welcome in our midst the first number of *The Bulletin* of the Rubber Growers' Association of London. We believe the publication is issued to members only, but the Association very kindly gave us a copy, and we are truly thankful for same. The title is ideal, like the name Smith for instance, but since there are many publications called *The Bulletin* (of this, that and the other), this new addition to the number may add to an already existing confusion, and this would be a pity, especially if it leads you to get what you do not want, when out for the R.G.A.'s booklet.

Running through its 50 or 60 pages, we are reminded that Mr. G. A. Talbot has been returned to the House of Commons as member for Hemel Hempstead. We are glad of this, because the tropics will need all the practical representatives they can secure in the House. The Labour member is a very good fellow, and quite useful so far as he goes, but his radius certainly has nothing elastic about it, and although he and his *confrères* could not exist in their millions as they do

to-day without the tropics, they are mostly ignorant of the fact and in no hurry to learn otherwise.

Speaking of native rubber out East, Mr. Hugh Devitt, in a special report on the Singapore market which he has contributed to *The Bulletin*, rightly regrets that some buyers over there very often stipulate that no Chinese rubber shall be delivered to them unless specified on the contract. Therefore Chinese rubber, however attractive, generally sells at a discount. The reason given for making such an exception is that the preparation is so uncertain; but, as Mr. Devitt points out, the rubber produced by small planters must not be confused with that from the more important Chinese planters who have large areas under cultivation and factories with up-to-date machinery.

Baling-press makers will note that manufacturers' agents are still baling, i.e., press packing the rubber, and there is no doubt with first-class estates who can be relied on, if contracts are made for the sale of rubber to go straight into consumption, several of the leading buyers would accept rubber so packed.

The vacuum chamber also comes into use again, in quite a novel way this time, for on p. 18 we are told that "A new method of coagulation is also very interesting. By this system no acid or other coagulation agent whatsoever is used. The latex is placed in an air-tight chambers and the air removed. The result is a perfect coagulation. Samples of the rubber so prepared are excellent, and the process should have a great future before it. Both sheet and crepe can be made."

It all reminds us of a Christmas story we once told (December, 1913) of how the latex will go in one end and the rubber come out the other. A worm feed from the vacuum coagulating chamber to the creping and sheeting machine will have to be arranged, and then—well, there you are. As the papers said at the time, although the idea had been advanced half in joke, there was much in it that may become true.

Perhaps in their next number *The Bulletin* will tell us why rubber has not run up in price as cacao, coco-nuts products, and especially sugar, have done. It is quite as necessary even if you cannot eat it, and why it should go down in value passeth one's understanding. It can only be supposed that the public are feeding and resting: America, which has had a less strenuous time (except over making money), is already "on the move"; but when Europe starts, then rubber will have its day, of that we are sure. It deserves all that it gets, but it can never get all it deserves. We discuss this matter also on p. 149.

GROWERS of arrowroot in St. Vincent and throughout the West Indies and elsewhere may be interested to know that the Director of Industries, in the Travancore State of Southern India, recently issued a *Bulletin* (No. 20, of 1919), on the manufacture of arrowroot in that State, where the arrowroot plant (we take it to be the Maranta) is said to grow wild, especially as the *Bulletin* also gives some useful hints on the cultivation and harvesting of the root, which it might be both interesting and useful to compare with the old-time methods in St. Vincent. Just now the price of arrowroot rules high in London, but that does not say that the crop is a remunerative one to the growers.

Shipping Coco-nut Oil in Bulk.

"WITH reference to the difficulty connected with the shipping of coco-nut oil in bulk in tank steamers," writes Mr. B. J. Eaton in the *Straits Bulletin*, "which is due to the solidification of the oil in cooler climates, the recommendation contained in the paper entitled 'Copra and Coco-nut Products,' published in the *Agricultural Bulletin*, vol. vi., No. 12, November and December, 1918, shows how this difficulty could be easily overcome by the use of steam coils in or around the tanks." Following this comes the information received from Messrs. Harper & Co., Kuala Lumpur, on behalf of the Asiatic Petroleum Company, which should be of interest. The letter states:—

"It will be of interest to your Department to learn that regular shipments of coconut oil in bulk have been made from Java to the Pacific Coast of America in the double bottoms of cargo steamers. As stated in the article in the *Agricultural Bulletin*, the difficulty of solidification in winter can easily be overcome by fitting steam coils, the installation of which, in double bottoms, presents no difficulty."

One of the greatest difficulties in connection with export of the oil is therefore easily overcome.

This method of overcoming the difficulty was pointed out in TROPICAL LIFE as long ago as June, 1914 (p. 112), after we had discussed the problem fully with the head of a leading West Indian shipping firm, used to handling not only vegetable oils, but also pitch in all degrees of hardness or softness.

"What the shipper has to remember," we pointed out, "is that vegetable oils, which in the Tropics remain liquid, and can easily be pumped into the tanks, become denser and more solid as they approach the temperate zone, until, when the time comes to unload the cargo, it is no longer liquid but solid, especially if, as can quite well happen, a temperature below freezing-point prevails at the unloading port at the time of the vessel's arrival. To overcome this—which, we take it, would be no trouble but an advantage on the voyage, since a solid cargo is less dangerous than a liquid one to carry—steam coils could be, and probably would be, introduced into the ship's tanks, and by means of these the oil would be heated and liquefied sufficiently to be pumped out. As to what heat would be necessary, must depend entirely on the length of piping through which the oil has to pass and the temperature outside, for if the thermometer was below freezing-point, then the oil would require to be sufficiently warmed to keep it liquid until it reached the storage tank ashore, or the transport receptacle waiting to move it inland. We leave it to experts to say the temperature required. It would have to be above 90° F., and if carefully purified oil, as for human consumption, is being handled, it might even go as high as 280 to 300° F., we believe, without fear of harming the oil; but as a rule 120 to 150° F., should be sufficient, unless the piping extends a considerable distance, and the weather was unusually cold."

As things tend to drift to-day, the shipment of coco-nut and other vegetable oils in bulk must be taken into account as likely to be necessary. If its movement through piping of a considerable length proved necessary, this could be arranged if here and there it ran through a heated chamber where any idea of becoming thick and solid would be at once prevented.

The British in India.

"THE STATIST" ON INDIAN POVERTY.

AS we write we are surrounded with a number of green reports and bulletins, the last one being numbered 83, and also have at hand the various issues of the *Agricultural Journal of India*, published by the Institute of Research at Pusa, to say nothing of other publications showing the useful work being done in India to improve the lot of the people, and by increasing the crops, and the revenue therefore, to soften the *per capita* taxation of her three hundred millions of population.

Each and all of these publications deal with a score or more of India's principal industries and crops. Each and all show a genuine desire on the part of the agricultural departments to increase the wealth, and so improve the condition of the agriculturists, and yet, on opening the pages of our esteemed contemporary, *The Statist*, for August 19th., we find on page 249, under the heading of "Indian Poverty," the following statement: "The rates of wages are lamentably low, and give ground for the accusation, so often directed against the British administration of that country, that the whole British policy does not, as a matter of fact, raise the economic condition of the vast majority of the people." If this last statement is true, whose fault is it? If, when the horse is taken to the water, or rather, as in India, water is often brought to the horse, who is to blame if the horse will not drink, the custodian or the animal? If, from the evidence with which we are surrounded, and if, from what we know, the Government shows itself anxious to see India become much richer and happier (a regular producer of 4,000,000 tons of sugar annually, like Cuba, for one thing), and the native refuses to answer the call and bestir himself to "make good"—whose fault is it, the Government or the governed? The Government may not be able to pour the water down the throat of the horse, but any animal that has come to such a state of apathy must be suffering from a natural, internal complaint that no Government can remedy. We certainly find it difficult to agree with *The Statist* when it goes on to say that the Government "has never exerted itself to raise the intelligence of the people, or to introduce a training which might qualify them to improve their condition." What about the dozen, more or less, of agricultural colleges dotted about India, whilst the "whites" are begging to have similar institutions elsewhere, in Ceylon, in the West Indies, Queensland, and Malaya; begging for them, and with no signs, at present, of having their prayer answered, unless they find the money to put up the buildings and endow the chairs. If any people in the Tropics have been neglected, and lack the facilities to be trained, it certainly is not the natives in India, whilst the "whites" elsewhere might be justified in "doing a grouse" on the matter.

"THE fact that India does not produce sugar," writes Dr. C. A. Barber in the Trade Supplement of the *Times* for August 30th., "would come as a surprise to the ordinary reader and when a usually well-informed writer, as the Editor of TROPICAL LIFE points to India as the obvious source from which increased quantities of Empire-grown sugar can be expected . . . it is time that an authoritative account should be given of the possibilities of the case"

Cane-Sugar and Vegetable Oil Manufacture.

FILTER CLOTHS, PRESS BAGGING AND PRESS MATS,
AND HOW TO WASH THEM.

WE have in the past had so many inquiries for, and so much correspondence on, the matter of cleansing the heavy or (comparatively) light cloths after they have been in the filter presses or extraction mills that the following information, the outcome of our correspondence with Messrs. Summerscales, Ltd., may be of use both to those whose inquiries we have already received as well as to others who are in need of similar information. Mr. Oldham, the manager of Messrs. Summerscale's export department, tells us that the following notes were collected by them whilst designing and perfecting their "Challenge Renown Filter Cloth Washer" previous to placing this now well-known machine on the market:—

The washing of filter cloths, effectively and cheaply both as to cost of the process and as to wear and tear of the cloths, now so costly, has always been and is always likely to be a somewhat difficult problem on sugar estates.

Help can, however, be looked for if estates owners and those immediately in charge of the filter cloth supply department in the factory will take the trouble to study the nature of the mud and sand, &c., that has been driven into the cloths and into the very fibres of the material, and then to realize what is needed to dislodge this "muck" at the least cost of time and wear to the cloths.

To do it by hand must surely only mean to drive the sludge and mud still further into the interstices of the cloth and even into the fibres themselves.

What is needed, therefore, is a process whereby the dirt, sand, &c., are not rubbed in, but quietly and persistently knocked out by continuous gently rappings as in the case of a modern carpet beating machine. It is now recognized that to sweep a carpet only removes the loose dust on the top, the very process of passing the broom over the carpet can only help to drive much of the dust further into the pile, and the more vigorous the sweeping the more compactly is the dust driven in.

As with carpets, so with filter cloths. Your big, brawny mammie will be a drawback rather than a help, whereas a few minutes' gentle rapping in one of our machines will, in collaboration with the liquor in the drums, do all that is needed, and do it more quickly, at less cost, and with far less harm to the cloth than any hand washer can do.

After the cane juice has been treated in the clarifiers, the muddy deposits or the scum therefrom are again boiled up and a certain amount of clear liquor drawn off, leaving a thick muddy residue made up of dirt, of the impurities from the canes, and also from the lime used to clarify the cane juice. A more penetrating and tenacious class of sludge cannot be conceived.

This sludge is then treated between cloths in filter presses of great strength and pressure, and the mud retained whilst the juice escapes through the taps. Not only is the sludge forced against the cloths under enormous pressure, but steam is introduced which further tends to soften and drive in the dirt.

How, therefore, can any material which has been

put to such a use be adequately, speedily and economically washed by hand? Sugar makers of to-morrow cannot afford to continue in the ruts of yesterday. To save time, labour and material means to save money, and if, therefore, you want to be a successful sugar-planter, especially when prices for cane sugar go down and the competition of beet-sugar comes up, you cannot afford to do your filter cloth washing by hand.

Remember, huge as the demand for sugar is to-day, the output of all kinds is already over 16,500,000 tons (12,323,700 tons cane and 4,306,000 tons beet), and competition between producers therefore will be very keen as soon as the markets settle down and tonnage is free.

To waste money, therefore, on a minor, but important matter as the washing of your filter cloths cannot be tolerated, especially as by installing these machines you will not only save money in your pay sheets, but increase the price of your sugar, for clean filter cloths means brighter and higher-priced sugar.

The foregoing refers only to sugar, but the information applies with equal force to press-bagging, press-mats, and filter cloths from vegetable-oil machinery. These are not affected by the sludge that comes from sugar, but they have the minute portions of the linseed, cottonseed, or other husks sticking to them, or which have been driven in by pressure and by the oil itself when endeavouring to escape. There are also solids from the oil that make up for any but the worse sludge from the sugar dross, and so, on the whole, it can well be claimed that what will do for thoroughly cleansing sugar cloths will also do for the material used in vegetable-oil mills.

Review.

The Preparation and Vulcanization of Plantation Pará Rubber, by B. J. Eaton, F.I.C., F.C.S., Agricultural Chemist, F.M.S. assisted by J. Grantham, B.A., and F. W. F. Day; 398 pp. with many plates and diagrams. Price \$1 (2s. 4d.). Weight 40 oz., being Bulletin 27 of the Department of Agriculture, Kuala Lumpur, F. M. States.

When the rubber congress takes place in London next June, many of those contributing papers or taking part in the debate are likely, nay, certain to have much that is in the above book at the back of their minds, if they do not directly make use of it for the simple reason that with rubber, as with cacao, vegetable oils and indeed as with all raw materials, the elimination of variability in the quality, colour, &c., in the output has become a crying need and, on all sides, we hear the cry: Standardize your crops, and bulk the shipments. How can you do this when each estate, when portions of even the same estate, differ in many points in the produce turned out?

Realising this, Mr. Eaton "got busy" and after infinite trouble and pains, he and his assistants have given us in the book under review a report on the research work done in connection with the variability of plantation Pará rubber carried out by himself and his colleagues during a period of over three years.

"Many of the results arrived at," writes Mr. Lewton-Brain, Director of Agriculture, F. M. S., in April, 1918, in the Preface he contributes to the book,

"have been published in our *Agricultural Bulletin*, and some of the strictly scientific parts of the research work done have appeared in the *Journal of the Society of Chemical Industry*."

As Mr. Lewton-Brain went on to describe, it has, however, been considered, and very rightly considered, desirable to collect all the material together and the book now published includes them as well as many new experiments hitherto unpublished. These new experiments it seems, completed the investigations made up to April last year on a number of side issues or contributory factors in connection with estate factory practice, which effect the quality and hence bring about the variability of Pará rubber. For this reason alone such a work must become a standard authority up to the date mentioned, and we can only trust that Mr. Eaton and his colleagues will continue these useful and extremely important investigations, and publish a similar work later on. Meanwhile, we shall hope to hear what progress has been made, when we all meet together, as we hope we shall do, next June at the Agricultural Hall.

In conclusion we beg to confirm the claim made in the last paragraph of the preface, viz.: that the researches, reported on in this book, demonstrate beyond any doubt the value to the rubber industry in Malaya of the action of the Government in the inauguration of the experimental vulcanizing factory and laboratory at the Agricultural Department and the value of conducting researches of this nature in the country of origin of the product. This being so, think what progress can be and will be made when we have those agricultural colleges and institutes of research in the tropics that we have asked for so long.

High Costs and Restricted Output in the U.K.

BRITISH v. FOREIGN MACHINERY.

THE following letter appeared in *The Engineer* of September 12th, p. 254, and points the same warning finger as to what we must look for if prices over here remain so high and outputs of coal, &c., so low, that the same writer does in the series of articles he contributed to, and which are now running in, *The Indian and Eastern Engineer* of Calcutta, on "Rubber Machinery of To-day and To-morrow":—

To the Editor of "The Engineer."

SIR,—In your issue of November 16th, 1917, you were good enough to publish a letter from me concerning the moral right of trade and technical papers to receive and publish advertisements after the war of German firms or of concerns known to be German "behind the scenes" offering machinery for sale.

I am now appealing to the engineers, masters and men, through your columns, to ask how this matter stands to-day. Do the members of the British Engineers' Association still believe that planters and others in the Tropics and elsewhere will refrain from buying American or German machines and their parts whilst costs in the United Kingdom are so high and the wages demanded by the workers in comparison to the output so much above the parity of costs elsewhere. Buyers abroad will, of course, do no such

thing. Why should they? All things being equal, they will give us the preference, but not otherwise. They are getting tired of this one-sided cry of support British industries, when their—the Tropics'—share is all paying out, and receiving no (real) value in return for all the sacrifices they have made—especially the rubber and coco-nut planters in the East—to help win the war.

There are many over here who seem to imagine that the United Kingdom constitutes the whole of the British Empire, and that no other centre can compete with us in value for cash received. With rubber at its present low price—below pre-war rates, whilst sugar is four to five times its pre-war value—planters cannot afford to pay fancy prices for their machines. Since this is so, and as we have a score or more of excellent engineering firms out East, wealthy, reliable, well-equipped and able to turn out any machine promptly and at a reasonable figure to compete against the German, Japanese, or American makers, would it not be wise for the unions here to recognize that fact, and to realize that even if the men are still over-tired after the war, and have great hopes and aspirations for their (own) futures, they are not singular in these feelings and ideas, and so if others can and do produce what the world is needing at a lower range of values than seems possible in the United Kingdom, they cannot expect buyers abroad to come to the United Kingdom for their machines. Nor must they imagine that our own firms in the East and our competitors, German or Allied, will not vigorously advertise and push the sale of their machines, confident of the fact that their costs are reasonable, their output per man and horsepower employed up to the mark, their delivery prompt, and the quality and finish of their wares in every way suitable for the markets to be supplied.

I am told that Allied firms can put and are placing machines in English factories much below English quotations. The unions may force Parliament to keep such machines out of the United Kingdom. They may do so, I do not say that they will. But I do say that even if the workmen succeed in building up a tariff wall around the U.K., those two letters, or the area they represent, are not the whole of the British Empire, nor of the world. Trade will go on "as usual" abroad, but not with the United Kingdom, for costs here will be so high and restriction of output so rampant that the factories here will not only lose their trade abroad, but cease to require machinery, in comparison to what they should do, in their works at home. Until prices in the United Kingdom are more on a parity with those on the Continent and elsewhere, what is the attitude, therefore, of the B.E.A. towards those advertising machinery made outside the United Kingdom

H. HAMEL SMITH,
Ed., *Tropical Life*.

London,
September 5th.

Trade, Politics, and Finance.

THE Sao Paulo correspondent of *Wileman's Brazilian Review* wrote at the end of July that, on that date, there could not be the slightest doubt that the coffee crop will prove smaller even than was pre-

dicted, possibly not over 2,000,000 bags, in which case entries will at most be 8,000,000 inclusive of, say, 300,000 last crop and 500,000 from Minas and Parana, &c. Production on the *fazendas* was simply ridiculous, *fazendeiros* who reckoned on 15,000 *arrobas* at least are finding that they will not get over 3,000, and many planters are now complaining that they have no coffee to pick. "I know several planters myself who expected to harvest 10,000 *arrobas* who will now be glad if they get 2,000 *arrobas*," concluded the writer.

"Sugar supplies also seem likely to run short. Judging by the reports from various sugar interests hereabout, it would seem that the principal concern of the trade at the present time is to supply the demand," so said the Francisco correspondent of the *Louisiana Planter*, writing on August 7th. "Inquiries for refined sugar are reported from far distant points. The general manager of a certain firm here showed me a dispatch a few days ago from Manila asking whether his company could supply beet sugar in large quantities and at what price. Reports also claim that within the last ten days cables from the Orient have been received seeking to purchase up to about 50,000 tons of granulated sugar." On this side (in the United Kingdom) promises to supply householders with sugar for stone fruit jam have only been carried out up to 50 per cent. of the amounts asked for and promised, at least in some cases.

Rubber shares had a day to themselves on September 1st, but the excitement had died down by the day following; all the same the shares have been considerably strengthened, as they deserve to be. If cotton factory shares can jump up as they have done, plantation rubber shares certainly ought not to stagnate. When the Central European countries settle down, and having bought greedily of food-stuffs to feed themselves, they can turn round and think of other things (paying off their bill for devastating Europe among other items), the demand for tyres and rubber goods will be very heavy, widespread and permanent. No flash-in-the-pan only like that day of days on the rubber share market. Not only will Germany be buying, but all Europe as they receive money from Germany (but that cannot be immediately) to help restore the Hunnish mischief on all sides.

Speaking of this, the London *Observer*—whose City Notes always deserve close attention, whether the reader is here or in the tropics—told us on September 7th that "the mad rush to buy rubber shares came from the provinces, especially from those centres where people have so much money that they do not mind what price they pay. The canny Scot sent orders to buy at best; in bygone days he haggled over farthings, often getting his way . . . Undoubtedly the rubber outlook is encouraging . . . The rubber industry has a long row to hoe before it gets back to its former prosperity."

During the first week of this month the question of exchanges continued to cause anxiety. The rupee was worth about 1s. 10d., whilst the Paris exchange stood at frs. 34.70 c., the Belgian rate frs. 35.40, and it took 94 German marks to make £ sterling. The New York exchange, on the other hand, had fallen to \$4.17 c. Silver after a drop went forward stronger

than ever, and touched 61d. for bars. The demand for sugar was as strong or stronger than before. Rubber stood at 2s. 1½d. for *crépe*, and a little cheaper for Standard sheet on September 6th, against 2s. 1½d., or 2s. 6d. for hard fine Pará.

Mr. George Croll, of Messrs. Harrison and Crossfields, Ltd., on whose shoulders the mantle of the late Mr. Arthur Lampard can be said to have fallen so far as tropical planting and development work, especially in connection with rubber and coco-nuts and tea are concerned, speaking at the tenth ordinary meeting of the Rubber Plantation Investment Trust, Ltd., told the shareholders he estimated that the total area under plantation rubber was about 2,750,000 acres, but that no reliable statistics were available. This at an average of 400 lb. to the acre (too liberal for the whole of the 2½ million acres in our mind) places the ultimate potential output at 500,000 tons. This should be obtainable in about seven years' time, and he calculated that the rubber would all be needed, judging by the way that America alone is "lapping it" up for tyres, and there are other uses for rubber besides tyres, although most people seem to forget so at times. "In the U.S.A.," Mr. Croll tells us, "the number of motor vehicles registered in 1913 was just over 1,000,000, in 1916 it had grown to 2,500,000, and to-day it is said to be 6,000,000." The tendency to leave badly managed and hopelessly congested railways to get out of their muddle and to send goods by motor instead is increasing in all countries, and all this means tyres and more rubber, especially on the big transport motors with four double wheels, and therefore eight tyres to be purchased and used.

Talking of this, it has always appealed to us as likely to be better to run heavy or bulky transport motors on six wheels instead of four. It need not, we should imagine, make the vehicle much, if any longer. The weight could go on the bogey with its four wheels well under the load (the two front wheels of which could possibly be given some "play" by means of springs, to turn slightly left or right when turning at right angles or going round), and the two front wheels remain perfectly mobile for steering. If the idea is feasible it would benefit both the tyre as well as the transport world, and also the roads, as the strain and wear should be more distributed, and anything that tends to save both the tyres and the roads is sure of a warm welcome on all sides.

General Guggisberg is going the right way to work in order to secure the confidence and gain the support of all interests and races in the big improvement schemes which he hopes to carry out on the West Coast of Africa without waste of time or money. We wish the new Governor good luck in every way: in health and in a speedy (comparatively speaking) consummation of all that he wants to see achieved to open up the Coast, to lessen costs, and to enrich the people and improve their lot in every way. Old railways, we hope and believe, will be made new, and surveys made for new lines, especially towards the north, with motor roads to "feed these lines" with up and down freight as the railways proceed.

Only one word of warning we would urge. Do not plant any more cocoa. Encourage the exploitation and, if need be, the planting of oil-palms, and the

cultivation of coco-nuts to run 5,000 to the ton of copra and not, as now, 7,000 to 8,000 nuts; but do not plant more cocoa, we have too much already of Accra kinds. Besides we have never yet had all that the West Coast could, or rather, that it does produce. Even 90,000 or 95,000 tons has been more than we cared to see in a year without plenty of better grades to go with this common stuff; what will happen, therefore, when the new transport facilities come into being and we get out the full 120,000 tons of cocoa that grow on the trees remains to be seen. The question of paper money also needs attention. Trading facilities as well as transport facilities will be secured also when the small paper money, shilling notes in particular, are replaced by money, not necessarily silver, which the natives understand and have far more confidence in.

The week ending September 13th found the German mark going 110 to the £, so no wonder imports into Germany, including cocoa, were checked. From under twenty to 110 to the £ is a good big rise, but probably Germany will find a way of transferring the loss on to the shoulders of the Allies. As Cardinal Mercier reminds us, the spirit of Germany is unchanged. She will evade payment and plot to revenge her being punished and so bring on another war in every way possible.

Talking to Mr. Race, the Secretary of the Colonial Bank, which is doing so well on the West Coast of Africa, that gentleman confirmed our opinion as to the great help that metal coins instead of paper would be to small traders, and in fact to any but the very big firms who at present secure more than average supplies of silver to buy cocoa and produce through the large purchases made at their stores. The Colonial Bank is gradually completing its network of branches and agencies, so that by the time that the new transport facilities are completed they will be on the way to dominate the chief trading centres in West Africa. The new branches opened at Koforidua and Nswam will greatly help to bring this about.

The produce markets in London are very firm and more cheerful, but of course there is much uncertainty in the air both as regards what supplies will be available for distribution in the U.K. as well as for export. At the moment prices remain steady or with a slight inclination to go back, as with sugar and copra. Rubber shares remain quiet after the rush, but rubber itself shows an advance. With sugar, West Indian crystallized sold at 91s., and Mauritius, we are told, has obtained an average price of 50s. per cwt. f.o.b. for 175,000 tons of her present crop, as compared with the average rate of 17s. 8d. for the last crop. Cloves are worth 1s. 8d. to 1s. 10d. a lb. Cotton stands at 18·37d. for fully middling. Rubber "bucked" on account of American orders, but closed (on 13th) below the best, at about 2s. 2d. to 2s. 4d. for No. 1 Crêpe and 2s. 2d. to 2s. 3d. for smoked ribbed sheet, against 2s. 6d. for Hard Fine, 2s. 3½d. for Soft, and 1s. 6d. for Caucho Ball. Copra has eased down to £58 for Ceylon, £58 15s. for Malabar, and £56 10s. for fair merchantable. Linseed oil is down to £94; Cotton seed oil to £95; Ceylon coco-nut oil, £101, but only £99 10s for near forward delivery, and Cochin £102. Firsts Castor Oil is £101.

The London Cocoa Market.

BY THE EDITOR.

TO-DAY, when Arriba Guayaquils are quoted in London up to 13s. per cwt., one wonders how the planters and exporters are feeling out in Ecuador, since they were fairly jubilant when their Guayaquil cocoa was only fetching 100s. in London. They must feel to-day like the owners of the *estradas* felt up the Amazon when rubber was at 10s. and 12s. per lb.; let us hope, however, that Ecuador will make better use of her big profits than some of the Amazonas *estradistas* made of theirs. The thieves, male and female, especially female, which history claims used to watch for and welcome the return of Morgan the buccaneer and his mates when they came back to Port Royal, and the *Palisados* in Jamaica, after a marauding expedition, would pale, we believe, in the warmth of their welcome compared with that offered by the *cosmopolitanas* who welcomed some of the rubber kings in Manaos and elsewhere during the boom. With this lesson behind us, the Latin American of to-day who is making a big pile out of sugar and a small but still quite a respectably sized pile out of cocoa, would be well advised to re-invest a good portion of those profits in building up the industries out of which they have come. If Mr. Rorer is correct, as I am sure he is, Ecuador would be well advised to nominate a practical working committee to inquire into, and report on, the state of the cacao industry in the Republic; to try and obtain an accurate count of the trees and their yield to-day compared with five and ten years ago; and, above all, to secure reliable information on any reports that the present production tends to decrease because existing estates are growing old and exhausted and without any fresh ones to take their place. Why are not these new estates coming along? Is there not land suitable for them? These are queries that the committee must by-and-by answer, and then, if the land is there, Ecuador will be wise to put her present profits into a common fund to plant up those lands with new cocoa. Why not?

Going back to the jubilation of Ecuador over the rise in prices for cocoa, the *Bulletin* of the local Chamber of Commerce for April was congratulating planters on receiving 30 sucres (sucre = \$4867 U.S. currency) against 100s. in London. Of the 6,446½ tons shipped in April, 4,137 went to Havre, 1,417½ to Liverpool, and 516 only to New York. To-day Arriba is worth 128s. to 130s. in London.

We have had practically no public sales in London since my last report. Congestion at the docks, the slow rate of working and delivery of samples, holidays at the works, uncertainty as to sugar supplies are but a few of many reasons given for the decidedly dull time we have passed through so far as home buying has been concerned. The export demand also went slack for reasons about which there was no doubt; first and foremost the question of exchange, and then came rumours from the continent which culminated in the German Government provisionally prohibiting the importation of cocoa into that country. This, it was said, was rescinded on September 6th, and probably came into being to allow the authorities, Allies and

Germans alike, to regulate the movements of the article, to arrange for payment in a manner that would steady exchange values so far as it was possible to do so, and perhaps even to put a curb on Germany over-recklessly buying goods that she might be able to dispense with, until she had arranged to pay for absolute necessities. These points settled, the embargo was lifted in time for the big sales on September 8th, when the prices realized are given at the end of these notes.

Meanwhile Havre was quite busy during August. With a stock of 338,035 bags at the end of July, she cleared 76,365 bags (19,367 San Thomé and 29,000 Accras), and delivered 42,000 (21,720 Accras), leaving her with 372,480 bags on hand as under, and there are in addition 120,000 bags "alongside" waiting to come in and be cleared, including 56,000 San Thomés.

Havre Stock, August 31st—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	11,166	200 to 205	985	148 to 152
Bahia ...	40,154	185 „ 197	3,869	136 „ 146
Venezuela ...	15,362	210 „ 245	6,603	145 „ 175
Trinidad ...	32,898	212 „ 217	12,154	146 „ 152
Grenada and O.W.I.	5,664	185 „ 200	13	142 „ 149
San Thomé ...	19,361	190 „ 200	550	136 „ 145
San Domingo ...	3,737	175 „ 180	459	134 „ 140
Haiti ...	20,152	155 „ 180	807	128 „ 140
Accras, &c. ...	127,679	174 „ 180	1,485	128 „ 135
Guayaquils ...	94,175	209 „ 207	6,478	145 „ 155
Others ...	2,132	—	5,525	—
Totals ..	372,480 bags		38,928 bags	

By weight, Havre (23,201 tons) and Bordeaux (12,755 tons) had 35,965 tons between them in stock at the end of July. The bag stock is returned as having been 338,000 for Havre, and 198,000 Bordeaux = 53,000 bags in all. As regards her deliveries for consumption, France returned for the six months, January-June, 23,002 tons (of 1,000 kilos) this year, against 19,740½ tons last year, and 22,014½ tons in 1917. The chief transactions of late in Havre included (according to Anthime Alleaume) Trinidads, Bahia, Sanchez, Guayaquils and Accras.

Coming to London, the stock on September 13th compared as under with previous years:—

London Stock, September 13th—	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	39,564	6,434	26,849	24,400
Grenadas ...	17,537	10,759	28,453	16,280
Other W.I. ...	6,772	2,908	25,028	21,569
British African ...	36,726	32,900	62,681	37,148
Portuguese African ...	7,320	40,033	13,530	23,176
Cameroons ...	3,095	1,936	12,540	1,484
Ceylon and Java ...	7,437	11,980	38,657	28,898
Guayaquils ...	9,253	16,361	48,813	51,707
Bahia and Brazil ...	984	2,337	7,315	12,537
Other foreign ...	10,393	7,001	8,280	11,945
Totals ...	139,081	132,649	272,146	229,144

In comparison, therefore, with the entire stock in the United Kingdom, London continues to show but a small total. According to the Board of Trade returns to the end of August, the total stock in the United Kingdom on the 31st stood at 73,500 tons, multiply this at 15 bags to the ton and we get 1,102,500 bags as being on hand in the United Kingdom (to say nothing of the dozens of boats, especially at ports other than London, waiting their turn to add to this total). Of this total London, as above, only con-

tributed 139,081 bags. Liverpool still talks of having but little over 200,000 bags, so one can only sit up and speculate on two points: (1) Where are the 750,000 bags that are not supposed to be in Liverpool or London, and (2) how much cocoa is alongside the ports waiting to be landed and cleared? I recommend people suffering with insomnia to try and work these figures out when they want to sleep.

Coming to more general matters, Trinidad at the moment is said to have little or no cocoa on hand, but there is a good demand over there for any that does come along. The weather was apparently good, but more rain, I should imagine, rather than less, was needed to help along and assure big pickings from December to March. The United States had, at last, started to buy, for some 30,000 bags left for New York in July, against only twice that quantity during the nine months previously, say June-October. Thus it comes about that by August 5th, out of 302,277 bags of cocoa exported from Trinidad, America received 96,000, France 141,500, and England 64,725 bags.

New York also got the lion's share out of the Bahia shipments in July, say 19,032 bags out of 41,533 bags shipped. Thanks to her heavy exports in May, the three months' total, May-June-July, of the Bahia exports is well ahead of previous years amounting to 172,271 bags, against 155,434 last year, 106,804 in 1917, and 154,520 bags in 1915 (not 1916).

Liverpool, although she spoke of her market at the beginning of August as having been quiet, seems to have been busier, at least on the surface, than we were, at that time, in London, and seem to have got through a good deal of business for, according to one or other of the Liverpool reports, one gathers that the Home trade at any rate had been buying, although it is true, on its own rather low basis for values. Prices included 92s. 6d. for fine Accras, against 108s. to 110s. (normal values) for export. Other sales spoken of, included 125s. as the value of superior Bahias for export and only 114s. for home trade, whilst San Thomé is valued at 120s. for fine.

All this time London was quietly selling or valuing Trinidads up to 128s. or 128s. 6d. for export and 125s. to 126s. for home use with 127s. for export Grenadas, whilst 127s. 6d. had been paid for St. Lucias. No sales of Ceylons have been spoken of nor of Guayaquils.

I said that Liverpool may seemed to have been busier than London "on the surface" because I believe a good deal of business has been going on with all centres and for manufactured cocoa as well as raw. On September 6th, for instance, a number of inquiries for powder had to be satisfied. As it was for export, Germany must be the ultimate buyer. It is too much to hope that my advice has been taken, to send, not raw cocoa to our chief enemy, but the manufactured article so as to leave some money out of the deal among the workpeople over here.

Matters in Germany are more disturbed than ever. Like the congregation of a chapel which suddenly finds itself in the vestibule of the building where it can talk more than sufficiently in ten minutes to make up for its previous quietness of over an hour, so are the Germans "going it," politically, socially and financially after the spell of silence that was forced on them whilst the final peace negotiations were being dis-

cussed in Paris and the treaty signed. All this excitement must die out before the real post-war trade and consequent demand can truly be felt, whether for rubber, vegetable-oils, or cocoa. When that day comes then I believe we shall all be busy. The price of rubber should go up, at least 50 per cent., and then be very moderate, but I doubt whether present values of cocoa and vegetable-oils will be exceeded. If they want to rise, I fancy the authorities may want to clip their wings. I may be wrong in such views, and it can well be claimed that no one has at any time spoken seriously of cutting down the price of sugar, and since this is so why should cocoa and vegetable-oils, &c., have their values curtailed, at any rate, for export.

The Board of Trade returns for August, show that out of 7,850 tons of cocoa that the United Kingdom received last month, 4,500 came from West Africa and 1,100 from the West Indies. Of the eight months' total receipts as under, 97,462 tons, 61,800 came from West Africa and 11,850 tons from the West Indies. Here are the movements since January:—

Raw Cocoa Movements in the U.K.—

	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Aug 31st. Tons.
Jan.-Aug., 1917—	53,310	34,302	4,552	591,000
„ 1918—	12,851	41,996	583	14,250
„ 1919—	97,462	39,723	8,152	73,500
Incr. 84,611	Decr. 2,273	Incr. 7,569	Incr. 59,250	

The Bahia shipments for the first three months of the present crop year work out as under:—

Bahia Shipments—

	1919 Bags	1918 Bags	1917 Bags	1916 Bags
May ...	107,540	90,729	18,855	51,753
June ...	23,198	14,025	20,194	33,514
July ...	41,533	50,700	67,755	20,357
Total	172,271	155,454	106,804	105,624

Against the above exports, 172,271 bags, the receipts from up-country amounted to 70,233 bags, so that even now over 100,000 bags have had to be taken from the stock at the end of April to make up these shipments.

Prices and demand really remain as they were when we went to press last month. Without sales for three weeks, then with a huge auction, over 24,000 bags offered, at which next to nothing sold, for less than a thousand bags changed hands under the hammer, it might just as well have been that the entire four weeks were allowed to pass without holding any auctions. I do not believe that when the October number appears I shall have a very different tale to tell. After October, however, many things will have had time to happen, and buying, both for home use and export, will be very general. Those, therefore, with cocoa on hand would be well advised to send it over to catch the demand in November, when supplies will probably be lagging behind the demand.

Calling your attention to what has been said in the previous article about General Guggisberg and his work-to-be on the Gold Coast, I will conclude by quoting Trinidads as now being worth 123s. still for export and 125s. for home use, and Grenadas and other West Indies a shilling less. Fine Ceylons would sell well now, but there are none about.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 10.]

OCTOBER, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:
"CINERARY, LONDON."

Telephone:
LONDON WALL 3151.

The Future of Camphor Production.

POSSIBLE EFFECT ON THE CELLULOID INDUSTRY.

THOSE interested in the production of camphor outside of Japanese territory (an industry that is being neglected within our Empire to a degree that we feel sure we shall regret one day, since our production of camphor is practically nil*) as well as those who use camphor as a raw material or as the basis of their manufactured goods, should secure and carefully study a copy of the report issued by the Department of Agriculture and Commerce in Japan, for it truly shows which way the wind over there is tending to blow. Particulars given, so says the *Journal* of the Yokohama (Japanese) Chamber of Commerce, show that the controllers of the Camphor Monopoly are now encouraging the laying out of camphor plantations in Japan and Formosa with a view to meeting the growing demand on the international market. Before the outbreak of the war, i.e. in 1914, the annual demand for camphor in Europe and United States was 9,000,000 kin. The output of camphor in Formosa and Japan up to the end of 1916 exceeded 10,000,000 kin per annum, but it has since shown a gradual decline on account of a steady advance in the scale of wages and other causes. In 1917 the output fell to 8,000,000 kin, and it was further reduced to 5,000,000 kin in 1918. With the outbreak of war, there arose a considerable demand for the article throughout the world, the supply of German camphor being entirely suspended. To make the situation worse, the annual output of camphor in China was reduced to something like 150,000 kin only. Since the signing of the armistice in November the Japanese agents of the Camphor Monopoly have received many orders from Europe, America and other quarters, where the celluloid industry and other enterprises in which camphor is necessary are being developed. The Japanese Camphor Monopoly early this year, however, drew up a programme for protecting the celluloid industry in Japan, necessarily at the expense of the English, American and other markets, since the aim, at least until supplies are more ample, is to curtail the shipments of camphor abroad. At the same time they are concentrating their energy on the cultivation of camphor trees in Formosa and Southern Japan for the purpose of meeting the future demands on the foreign market. If Japan sees fit to do so, why not Ceylon and elsewhere within the Empire?

* It was dissatisfaction over our dependence on one country for cotton and another for camphor which caused our editor to include his apparently irrelevant chapter on "Camphor in Ceylon" in our book, "How to Pay for the War."

CONTENTS.

	PAGE
The Future of Camphor Production	153
The Uba Cane in South Africa... ..	154
Agricultural Colleges in the British Tropics	155
Estate Implements of To-morrow	156
Tobacco Planting.—No. LI.—Tobacco in the F.M.S. (con- cluded)	157
Coffee Planting for Profit.—No. XXIV.—Diseases	159
"Tropical Life" Friend.—No. 172	160
Reconstruction and Chambers of Commerce.—The Need of Reform	161
The Japanese in the Pacific	162
The Fertilizer—a new Fortnightly Journal	163
Trade, Politics and Finance	164
The London Cocoa Market	166

The Uba Cane in South Africa.

THE dogged fight being put up over here to try and enable the Matabele and Mashona tribes to keep their lands, reminds one of a useful pamphlet that was published a little time back by The Chilean Nitrate Propaganda of Maitland Street, Bloemfontein, on the progress made in the cultivation of the Uba variety of the sugar-cane in South Africa.

It will be remembered that in December, 1897, Zululand was annexed to and became part of Natal. Its area is approximately 10,500 square miles, and in the census of 1904 the population was returned as consisting of 1,693 Europeans, 203,373 natives and 120 Indians. After the publication of the Zululand Commission's report in 1905, the opening of portions of the country for European settlements commenced and has proceeded, in suitable localities, in a manner which furnishes an instance of rapid agricultural settlement. For this, the sugar industry is solely responsible, and the Uba cane has done its share to help in the progress.

Although the sugar-cane is a tropical plant requiring great heat with an abundant rainfall to grow to perfection, it can be successfully grown in a sub-tropical climate as is proved by the plantations in the Natal coast belt, a tract of country extending from Port Shepstone on the South Coast to beyond the Umfolosi River on the North Coast, and measuring about two hundred and sixty miles in length by from six to twelve miles in breadth.

The average mean temperature of the region embracing the cane fields in Natal is 77 degrees Fahr., and the superior results obtained in Zululand are attributable to the higher mean temperature obtaining in that northern area, where the period necessary for the maturing of both plant cane and ratoons is shortened. Owing to its deep-rooting nature, the Uba cane is able to withstand high winds, consequently wind-breaks are not required, nor are they in evidence in any cane fields.

As the sugar-cane does not mature in one year, and has to face great extremes of climate, severe losses are common, and that planters have been able to face the difficulties they have been subjected to is solely due to the outstanding suitability of the Uba cane to withstand the local adverse conditions.

The average annual rainfall is a little under 40 inches, but a limited rainfall is, in some degree, compensated for by the period of heaviest rains corresponding with the vigorous growing period of the cane, by the comparatively humid climate and by adequate and judicious manuring. It is well to note that the deep-rooting nature of the Uba cane, whose roots have, under favourable conditions, been traced to a depth of twelve feet, enables it to reach stores of sub-soil moisture inaccessible to surface rooting varieties, and to this characteristic is chiefly due its capacity of withstanding the dry winter weather and the recurring periods of drought, during which soft or shallow rooting canes have hitherto perished.

It is said locally that the name "Uba" is derived from the only letters remaining legible on a damaged label attached to the variety when first brought into the country, but as the name "Uba," or "Yuba," exists as far back as 1869, at most only one letter was undecipherable.

The cane was introduced into Mauritius from Brazil in 1869. The evidence that sugar-cane is indigenous to the New World appears most unsatisfactory, therefore it is extremely doubtful whether the Uba cane originated in Brazil; recent writers on the subject have no hesitation in naming India as its home, and it may have originated there and found its way thence to Brazil, *via* Southern Europe. If this speculation is correct, then the parents of Uba cane in South Africa have grown in the four continents.

That the Uba cane may have undergone some improvement since its introduction into South Africa is shown by the analysis made by Mr. Pearson in 1905:—

UBA CANE				Average	Maximum
Total solids in juice (per cent.)	...	...	...	20.32	22.79
Sucrose (per cent.)	...	...	...	18.61	20.79
Purity	...	...	...	91.60	91.20

and by his remarks: "The analysis shows a large proportion of fibre in the cane; but that indicates no inferiority in the juice; in fact, the quality of the juice as disclosed by analysis would not readily be surpassed anywhere."

For the purpose of comparison, the results of twelve of the thirty-three varieties of twenty-months' old cane, all tested under the same conditions as regards planting and fertilizing, at the Hawaiian Sugar Planters' Association Experiment Station, are given below (see also "The High Price of Sugar," p. 10):—

Order of Sugar Yields	Variety	Yields per Acre (in tons)		Quality of Juice		
		Cane	Sugar	Brix.	Sucrose	Purity
1 ...	H. 227	124.92	16.54	18.8	17.2	91.5
3 ...	H. 269	137.49	16.35	17.4	15.6	89.7
4 ...	H. 199	113.58	15.19	18.8	17.3	92.0
6 ...	D. 1,135	114.10	13.97	17.8	16.0	89.9
12 ...	H. 326	117.59	13.17	17.1	14.9	87.1
17 ...	H. 20	122.35	12.66	16.0	13.8	86.3
21 ...	H. 212	104.57	11.92	16.9	15.0	88.8
26 ...	Lahaina	82.83	10.46	17.9	16.4	91.6
29 ...	Rose Bamboo (Striped)	88.14	10.31	16.6	15.2	91.6
31 ...	H. 141	88.18	9.56	16.2	14.3	88.3
32 ...	H. 16	98.70	8.03	13.7	11.1	81.0
33 ...	Yellow Tip	51.72	6.87	19.0	17.3	91.3

H.—Hawaii.

D.—Demerara.

With the further evidence now at hand in regard to the great relative importance of nitrogen in cane fertilization in Hawaii, it is hoped that the last remaining doubts as to the economy of high nitrogen fertilizers will be dispelled. It is estimated that, in conjunction with phosphatic and potassic fertilizers, an average of 130 lbs. of nitrate of soda is used per acre on the 200,000 acres under cane on these islands, which lead the world in intelligent investigation for the intensive cultivation of sugar-cane.

The nature of the soil is taken into consideration in regulating the distance between the rows. Wherever fertilizers are used rationally the cane stools expand and produce larger and more stalks than would otherwise be the case without fertilizing. The application of additional plant-food also means a saving of labour, for the cane soon covers and shades the ground, preventing the evaporation of moisture and the growth of weeds. Cultivation, therefore, becomes much less expensive.

In passing, it may be interesting to note that, according to Mr. Olssen Seffer, the distance between

cane rows in Hawaii is five feet, and all fields are heavily fertilized, while from a number of experiments made in Louisiana Dr. Stubbs came to the conclusion that there was nothing to be gained by very wide planting and suggested the propriety of narrowing to a distance that will admit of the best cultivation.

Much more useful information is given in this 43-paged booklet about cane-planting and its cultivation in general and about the Uba cane in particular. Now when we are all "out" to increase the output of sugar within the Empire we hope the book will be widely read as its cost is light and its statements reliable. A post-card either to the Chilean Nitrate Committee, London (Friars House, New Broad Street, E.C.), or to Maitland Street, Bloemfontein, will bring you a copy post-free and for nothing.

Agricultural Colleges in the British Tropics.

PROGRESSIVE STEPS.—TROPICAL LIFE AN INTERESTED ONLOOKER.—THE FUTURE OF THE ROYAL BOTANICAL GARDENS IN LONDON.

THE Committee appointed by the Secretary of State for the Colonies to look into the matter of and to report on the need of establishing an Agricultural College in the West Indies, seems likely to issue its report fairly soon, for our Editor has just received a note from Mr. Algernon E. Aspinall, C.M.G., the Hon. Secretary of the Committee, in which that gentleman said, in answer to our offer to help: "The members of the Committee recognize, and greatly appreciate, the interest which you have shown for so many years in the proposed establishment of Agricultural Colleges in the tropics. In view, however, of the fact that they have already reached the report stage of their work" etc., etc. The rest of the note does not matter. The fact that a committee discussing the need of an Agricultural College for the West Indies should have reached the Report stage was indeed welcome news and now we are anxious to see that report, especially as Sir David Prain, Director at Kew, is the Chairman of the Committee drawing it up.

Meanwhile another report has come to hand, and here again the Director at Kew has presided, and the interest shown by TROPICAL LIFE in anything to do with placing the training of tropical planters and planting scientists on an established basis is mentioned. The committee appointed to inquire and report as to what steps should be taken to render the work of the Royal Botanic Society of London (which controls the extensive area known as "The Royal Botanic Gardens of Regent's Park"), has just issued its report in which we are told that:—

"Nothing was done on the lines of a former report showing how the usefulness of the Gardens could be increased, and your committee have been unable to ascertain why the proposals were dropped. They have themselves considered these proposals and have unanimously decided that it is not now possible to concentrate elementary teaching of Botany in any one

place, as all the evidence they have received is against its possibility and desirability. The evidence for partial concentration is hardly more favourable. With regard to the remaining proposals your Committee have considered these and other suggestions put before them by Professors Dendy, Farmer, F. W. Oliver and Greenish, Drs. D. E. Chandler and E. N. Thomas and Mr. H. Hamel-Smith of TROPICAL LIFE. As a result they have formed the opinion that the Royal Botanic Society could be made more useful from the scientific and educational point of view by the establishment of

"(1) A School of Economic Botany at which a knowledge of the economic plants and their products, including those of tropical regions, might be obtained.

"(2) An Institute which might be made a centre for research, more especially in plant physiology where the living plant is essential.

"(3) A centre for teaching in Horticulture, the students of which could receive their necessary training in pure science at existing London colleges.

"(4) Courses in 'School Gardening' at times suitable for teachers in Elementary, Continuation and other schools.

"As subsidiary to these activities the Gardens might extend their present utility as a centre from which Colleges and Botany Schools could be supplied with material for teaching and research, and in which students could make use of the existing facilities for the study of systematic botany.

"We are, My Lord,

"Your Obedient Servants,

(Signed) DAVID PRAIN (Chairman)

WM. H. DUNN.

ALFRED KEOGH.

MALCOLM MORRIS. ..

ROBERT CARR.

MORTON EVANS.

HUBERT J. GREENWOOD.

FREDERICK KEEBLE.

"To the Right Hon. Lord Ernle,
President of the Board of Agriculture
and Fisheries."

THE British West African Association seems going ahead and always in the right lines. Very few leading West African officials seem to escape their hospitable net. With men at the head like Sir William Mercer, Lord Morris, Mr. Picton Jones, the Elder-Dempster and Liverpool "big-man," Mr. Hyslop Bell of the Colonial Bank, to say nothing of Captain H. O. Newland, the Founder and Hon. Sec., it is, we suppose, only natural that the Association should make headway. All these gentlemen and a good many more were present at the dinner given by the Association to the departing Governor of Sierra Leone and the Gold Coast at Berners Hotel. The gathering was voted a great success and, it is believed, will go a good way to help those at home as well as those on the Coast the better to remember each other, and so be able to work together all the more easily during the coming eventful years.

Estate Implements of To-morrow.

TRACTOR V. ANIMALS FOR PLOUGHING.

OUR readers in the tropics do not, so we gather from the letters received, pay sufficient attention to the *Journal* of the Board of Agriculture in London, and they lose much by not doing so.

The illustrated articles that have appeared in this well-known monthly may not have to do with the tropics on the whole, but, to begin with, some of the articles which appeared in its pages on the value of oil cake from tropical crops as coco-nuts, palm-kernels, soya-beans, ground-nuts, &c., have gone a long way to help increase their consumption and so improve the prices paid by agriculturists for the cake, and thereby have enabled the buyers of the copra, or oil-seeds to pay higher rates for the tropical produce.

At the moment we are thinking more of the controversy that exists throughout the tropics and sub-tropics, especially when insects affect and kill off the animals, over the *pros* and *cons* of mechanical traction for ploughs, cultivators and vehicular traffic as compared with animal haulage. It is a question that can only be discussed effectively by those on the spot, but much can be learnt as to the advantages of tractors by closely following the articles in the *Journal* of the Board of Agriculture and similar publications. A useful article appeared in their issue last December (1918), p. 10-45, and we are hoping to see another after the Lincoln trials this month (September), and those of our readers who want to study the progress made with tractors should watch the English agricultural journals generally and see what they have to say on the subject. We hope they will say a good deal, as the matter is important.

So much for the tractors themselves. On p. 485, in their August issue, the Board of Agriculture, or rather Mr. Thompson Close, tells us, that speaking generally, tractor implements have reached a higher stage of development than the tractor itself; this we had also suspected, especially with regard to tractor ploughs, the English makers of which, Mr. Close adds, have undoubtedly lagged behind their American competitors.

Our great complaint with the English plough makers has been that, with the exception of Messrs. Ransomes of Ipswich, they have been too slow in taking notice of the splendid markets that exist abroad for ploughs and agricultural implements provided the right patterns and types are supplied. Ploughs have existed probably as long as ovens for baking the bread after the wheat had been cultivated and ground. Maybe the plough came first, the primitive appliance for bruising or grinding the grains the second, and the oven third. Be all this as it may, is it not disappointing that through all the centuries—and Chinese history states that the plough was invented by Shennung, who lived B. C. 2737—2697,* or getting on for five thousand years—that ploughs have existed, and during the many years of our Colonial and Imperial expansion, ploughs and agricultural implements have never been considered worthy of deserving the

advantages of a technical journal devoted to them entirely, and “we,” who first (in 1887) became interested in agricultural matters through ploughing, an interest that is keener to-day than ever, have never been able to “enthuse” our makers in the tropical and sub-tropical trade? Whose fault is it, the makers who shirk the cost and trouble of a “tub-thumping” campaign (the only one that will be effective) in every field where out-of-date implements are used, especially if owned by an educated or white agriculturist, or the latter who are content to jog along or even go under, because they are so hopelessly out-of-date in these methods?

We call attention to this very important matter to-day because many of the most hopeless “out-of-dates” are having the times of their lives just now, thanks to the war. The net proceeds gathered in from their lands exceed anything they dreamed of in 1913, and so, as they read these notes, if they do read them, they will laugh louder than ever (and how loudly these “won’t-be-taughts” can laugh everyone knows), but when the end of the boom comes, and it will come, then watch these men. Their prosperity, like their noise, is purely artificial, and then they are the first to beg for help, and to threaten the Governments and their fellow workers (who followed the times and so made permanent progress) with all sorts of violence if this help, which is pure charity, is not doled out to them. Had they adopted modern improvements—when it has been shown beyond a doubt that they are an improvement—these sponging outeries for help from the enterprise and charities of others would not be needed. All the same they will come in the future as they came in the past, and so we sound this note of warning to the governors and agricultural societies in the various colonies in the hope that they will “spot” those who refuse to bring their estates and their implements up to date whilst money is plentiful, so that later on, when normal competition is once more the order of the day, those who do not deserve consideration shall not receive it. We have had too much leniency for the boastful “won’t-be-taughts” in the past; they do a double harm, for they first set a bad example to others when things go well with them, and are an expense and often a nuisance when they go under. In the post-war reconstruction that lies ahead of us, it is to be hoped that such men will be sent—let us say—to Germany, to learn better ways, and especially to learn to appreciate a good thing when they have it.

We started to call attention to the illustrations of, and the work done by, the ploughs made by our old friends Messrs. Ransomes, Sims and Jefferies, Ltd., in the issue of the Board of Agriculture *Journal* mentioned at the beginning of these notes, especially, their two-furrow self-lift plough, RSLD—YL, facing p. 486, and their three-furrow riding plough, a little further on, firstly by itself and then (a full-page photograph) when followed by a land-presser.

Of course, as Mr. Thompson Close tells us, a great deal of inferior ploughing is entirely due to lack of skill on the part of the operator, and so tends to prejudice the farmer or planter against the instruments used. This is especially the case just now with tractors, for it is sometimes difficult in England to get an efficient tractor driver, and it is seldom that you can “pick one up” in the tropics should you want outside help sud-

* Prof. F. H. King in his book on the Chinese entitled “Farmers of Forty Centuries.” Pp. 225. TROPICAL LIFE Publishing Department.

denly. Still, this state of affairs will soon pass, and even to-day it is not insurmountable.

"One of the best general types of English ploughs," Mr. Close goes on to say, "is undoubtedly the *Ransome*, which has made itself popular in many districts. The makers have recently added to the general utility of this implement by the adoption of the two-furrow self-lift pattern, and successful trials have been made with this new plough. Where the heavier type of tractor is employed, the three-furrow riding plough has certainly given excellent results with the general purpose breast, leaving a clean well-set up furrow behind.

Other ploughs are discussed, but all American. After having been in existence for nearly five thousand years, how is it that this country has, apparently, only one up-to-date plough manufacturer? Evidently the disease is contagious, and farmers are not the only folks in England who are asleep. Again one asks whose fault is it that so many, possibly most areas under the Union Jack, are so slow in adopting up-to-date agricultural implements, and especially of improving them when adopted. The second is a sequence of the first, but is almost forced to remain a dead art as the first is so slow and unresponsive. When will both sides wake up?

Tobacco Planting—No. LI.

PLANTING EXPERIMENTS IN THE F.M.S.

(Continued from May issue, p. 76.)

In the main, the experiments at Juasseh followed closely on the lines of those at Kuala Tembeling, of which an account is given above. Several variations in these methods were necessary at Juasseh to meet the special conditions obtaining at that place.

After the first loss of seedlings through heavy rains, basket planting was resorted to, to ensure that at least some plants of each variety be propagated. The "baskets" consisted of a curled leaf, fastened with a pin, so that the leaf was curled into a cylinder. The bottom consisted of a small layer of clay, above which was placed good friable earth. In these baskets seedlings of four leaves were planted, and remained in the baskets until the roots appeared through the bottom of the clay. Transplantation of the basket and seedlings was then carried out. Good results followed the use of this method, and it might be advisable to give this method a further trial in subsequent experiments. The method was discontinued on the establishment of favourable conditions for the usual methods of transplanting to be employed.

For shading the newly transplanted tobacco, the native method of employing a curled leaf was used. The leaf is curled and fastened with a wooden pin (the mid-rib of a leaf), forming a cone which is placed over the tobacco seedlings. The Javanese tobacco growers recommend a mangosteen leaf for this purpose, as this leaf resists the weather longer than other leaves, and so can be employed on several successive occasions. All covering for transplanted seedlings was removed when it was apparent the plants were established.

The first nursery prepared suffered much from the

ravages of crickets, which, by burrowing just below the surface of the soil, isolated the seedlings from the water supply. This was only remedied by preparing a second nursery well away from the road reserve, and from the jungle, from which places it appeared the crickets originated.

Comparison of the plant records at Kuala Tembeling and Juasseh showed that in almost every case the plants made a more vigorous growth at the former place than at the latter. This is doubtless due to a great extent to the different soil conditions; but also in part to the fact that at Juasseh about fourteen leaves were allowed to mature on each plant.

The harvesting at Juasseh followed the same system as at Tembeling. It is of interest to note that the Malay system of harvesting tobacco is to cut down the whole plant, to remove the leaves, cut, and dry in the sun. This is a mistake. As has been pointed out, the lower leaves mature first, and should therefore be cut first. Furthermore, by cutting the leaves in the green condition and drying in the sun, the aroma of the tobacco is lost. These are points on which the native cultivators require instruction.

At Juasseh the leaves were dried on the verandah ("serambai") of a Malay house, and with complete success. The subsequent fermenting was done in a large wooden box. Records were taken of the loss of weight in the drying and fermenting process under these conditions as follows:—

DRYING PERIODS FOR TOBACCO AND LOSS OF WEIGHT IN LEAF DURING DRYING AND CURING. (JUASSEH.)

Reference No. E. B.	Weight of 100 fresh leaves	Weight of 100 cured leaves	Per cent. dry to wet weight	Days required for drying
16-17	80	18	22.5	16
17-17	50	11	22.0	16
18-17	61	18	29.5	16
23-17	71	18	25.3	26
24-17	75	22	29.3	20
25-17	72	18	25.0	16
26-17	90	23	25.5	24
28-17	98	21	21.4	14
30-17	45	11	24.4	14
58-17	93	26	28.0	28
59-17	43	12	28.0	24

It will thus be seen that a considerable loss takes place during the process of drying and curing, the extent of this loss depending largely upon the variety of tobacco.

The particulars given in the following table are worth noting, so we include them to end up with.

YIELDS OF TOBACCO LEAF. (KUALA TEMBELING.)

Reference No. E. B.	No. of plants harvested.	No. of leaves cured	Weight of leaves cured
			lb. oz.
* 15-17	13	174	1 2
16-17	146	1,424	14 8
11-17	125	524	4 6
19-17	112	699	6 8
23-17	416	1,748	25 12
24-17	196	1,774	21 4
25-17	169	1,949	25 4
* 26-17	79	399	5 8
* 27-17	32	474	3 14
* 28-17	60	484	4 14
* 29-17	86	674	7 15
30-17	162	1,274	9 8
Totals	1,596	11,597	130 7

Those varieties marked with an asterisk suffered badly from "wilting," otherwise a considerably larger number of plants would have reached maturity—resulting in a larger crop.

The selection of seed is an important point for consideration in tobacco growing, if the quality of the type is to be maintained.

Both at Kuala Tembeling and at Juasseh plants of the finest growth of each variety were selected for the production of seed. Such plants are not "topped," but allowed to grow normally, all lateral and basal shoots, however, being removed. Prior to the appearance of flowers, the head of the plant is "bagged" to prevent cross-fertilization, and so ensuring that the seed will come true to type. The capsules are allowed to remain on the plants until perfectly ripe, when they are plucked and stored in a cool dry place.

DISTRIBUTION OF SEED TO MALAYS.

Any work having for its object the introduction of new crops of native importance must at the same time consider the means of systematizing the distribution both of seed and also of information regarding the methods of culture of the crop. With a crop of the nature of tobacco, where care in cultivation makes the difference between profit and loss, the need for instruction becomes doubly necessary.

The native methods of growing tobacco are crude in the extreme, and it is, therefore, a matter of no surprise to find that the varieties of tobacco grown by them are poor in quality. Tobacco stock soon deteriorates through lack of cultivation; so the varieties of tobacco here introduced must be kept up to their high standard if the industry is to flourish in this country, i.e., the F.M.S.

The question of education in regard to this crop was one of the chief reasons for a small demonstration to Malays of the systems employed in the cultivation and curing of tobacco, which took place at Kuala Pilah in the latter part of November, 1917. Kuala Pilah was chosen for this purpose as being more central than Kuala Tembeling, and because the tobacco grown at the former place gave a truer idea of the conditions under which the natives would grow the crop. The objects of the proposed meeting were circularized to the District Officers of Negri Sembilan and three districts of Pahang, and their co-operation was readily given.

The Malays were taken over to Juasseh and shown the tobacco growing at that place. The characteristics of the different varieties were pointed out, and the growth compared. One of the writers gave an account of the methods of cultivation of the crop, the harvesting, and the curing process. Finally, they were informed that seed would be supplied free on application. Packets of seed have since been prepared at Kuala Pilah suitable for distribution. Sufficient seed has been placed in envelopes for cultivation by one cultivator. Since the demonstration there has been a steady demand for seed for all districts represented. At the time of writing 460 packets of seed has been supplied. In many cases the Malay officer has stipulated the varieties required, and these wishes have

been respected in all cases. Eight Kuala Pilah Malays decided to try the cultivation on a somewhat larger scale, and took seed sufficient to plant up a total of eight acres of land newly planted with rubber.

Regarding future possibilities of tobacco growing in the F.M.S., the progress thus far made in the introduction of tobacco seed into this country does not indicate in any way that the crop is suitable as a main crop for European planters, nor in fact that it would be suitable for such planters to grow even on a small scale. Subsequent experiments may prove this point, but in the absence of data as to possible yields, one is unable to make any recommendations. It is possible that areas of land do here exist suitable for the cultivation of the crop on a large scale, but such land has yet to be defined.

The trials on tobacco-growing here described point to the fact that tobacco may be grown by natives of better quality than the varieties at the present time cultivated by them, and one or more kinds could be introduced that would undoubtedly yield a greater quantity of leaf. Presuming that the crops already grown by Malays pay for the work, the cultivation with good varieties of seed should further stimulate the industry among this class of cultivator. Apart from the initial preparation of the land, there is little in the growing of tobacco that calls for hard work, but much that requires constant and close attention. At the present time there appears to be but little demand for women labour, and work on tobacco would certainly compare very favourably with the work that women of this country undertake in the cultivation of padi.

Malays who have asked for seed appear to have no anxiety regarding the disposal of the crop, and it is unlikely that they will experience any difficulty in this matter.

The experiments on tobacco have now been discontinued, but the stock of seed is being maintained at Kuala Tembeling. It is felt that it were better to pause, in order to observe the extent of the success obtained by natives with this seed before going further into the question. A representative distribution of seed has been made, and it is hoped that a review of the crops obtained may be possible in the near future, also that further work based on the observations made upon the native crops will be carried out.

THE END.

MESSRS. TREWHELLA BROS. report excellent sales for their stump extractors. Official reports from Ceylon probably formed a contributory cause to this, for they warn planters that root diseases continue to be prevalent where sufficiently careful attention has not been given to the removal of stumps. Ceylon also seems paying more attention to copra dryers, the number of which to be erected is said to be increasing. We had a visitor from the United States with us recently who was inquiring about the systems for drying copra placed on the market by Messrs. David Bridge and Co., Ltd., and the Tyneside Engineering Co., Ltd

Coffee Planting for Profit.—No. XXIV.

(Continued from January issue, p. 5.)

DISEASES—CORTICIUMS CAUSING PELLICULARIA DISEASE OF THE COFFEE PLANT.

"LAST year," wrote Mr. Edward Angus Burt, mycologist to the Missouri Botanical Garden in the annals of that institution for April, 1918, "Professor F. L. Stevens sent me specimens of coffee branches collected at Mayaguez, Porto Rico, in August, 1915, which were infested with the *Pellicularia* fungus and requested that study be made to determine whether this fungus is not one of the *Thelephoraceae*."

The request was complied with and Mr. Burt published a fourteen-paged treatise on the subject, illustrated with drawings by Miss Wakefield at Kew, which we cannot pretend to do justice to, but those who are sufficiently advanced in the science of plant diseases to be able to appreciate what Mr. Burt has to say on the subject he so ably discussed and has so fully traced back in the literature dealing with the *Pellicularia* fungus, should write to the Director of the Missouri Botanical Gardens, St. Louis, Missouri (or to Messrs. William Wesley and Son, 28, Essex Street, Strand, E.C.), and ask for a copy of the issue for April, 1918 (Vol V. No. 2). No price is given.¹

In the course of Mr. Burt's remarks, many well-known names appear: Dr. A. Ernst and his studies on coffee in Venezuela, Kuijper and fungous coffee-leaf blight in Porto Rico, E. J. Butler on the same trouble in Mysore, M. T. Dawe in Colombia, Hinchley Hart and J. B. Rorer in Trinidad.

On p. 123 we are told, "This study of the *Pellicularia* fungus on coffee plants in the tropics of America leads to the conclusion that this fungus is a *Corticium* not specifically distinct from *C. koleroga* and that the description should be broadened slightly to comprehend better the specimens now known from widely separated regions.

With the *C. koleroga*, the parasitic vegetative mycelium forms long, slender, mycelial strands of rather uniform diameter, whitish or pallid at first, finally fuscous, running along the branches and mid-rib and veins of the leaves, infecting the leaves and ramifying between the cells of the leaf parenchyma, finally emerging at many points on the underside of the leaf to form minute fructifications which give a mottled appearance to the leaf."

The article, after discussing the various *Corticiums*, concludes by telling us that the term "threaded blight" has been frequently used in plant pathology with reference to tropical fungi which ascend stems by filamentous, mycelial strands and fructify on the leaves, as in the case of *C. koleroga*. Such aerial mycelial strands are an adaptation to tropical climates for dispersal, apparently common to many species of

fungi of various genera and families. Elsewhere we are told:—

"In addition to the specimens of *C. koleroga* and *C. stevensii*, cited already, I have seen collections by Mr. J. A. Stevenson, 6498, 6748, 6748A, on *Casearia sylvestris* and *Hippocratea volubilia* from Rio Predras and Bayamon (Porto Rico), which show soft, white, mycelial strands running along the stems of the host plant to the leaves and not yet fruiting. Dr. F. L. Stevens—7469—on *Mayepea dormingensis*, from Mayaguez Mesa, Porto Rico, has a specimen, with fructifications still too immature for determination, which has spread by an effused mycelium rather than narrow strands for distances of three to four feet along the stems and extends out to leaves along the way. Mr. J. B. Rorer has sent me from Trinidad photographs of the mycelial strands of the horse-hair blight on the stems of cacao which seem to be white, cylindrical and compact; he notes that their fructification is usually a polypore.

"It is evident that many kinds of fungi in the tropics have the curious 'thread blight' habit of growth. One so fortunately placed as to be able to collect such fungi where growing could make sure that the fructifications were mature and of value for taxonomic study by making a spore collection on a glass microscope slide from the fresh specimen."

(To be continued.)

IN the *Journal* of the Jamaica Agricultural Society (February, 1919) a very useful article appeared on the subject of the cultivation of Sisal and Henequen (Fourcroya). Although this industry has practically died out in Queensland (the *Queensland Agricultural Journal* tells us) during the past ten years, previous to which time the plant was successfully grown, and when a good profit was made by planters who had installed the necessary machinery, it is yet a crop which, thriving as it does on land unsuitable for any other agricultural product, offers a good return for the fibre. About the year 1909, sisal hemp grown at Childers, at St. Helena, and in other localities, and sold at £24 per ton, yielded a profit of 50 per cent. on the cost of production. During the war the price of Sisal hemp rose to over £100 per ton, and doubtless there would have been many plantations established had it not been for the want of shipping facilities. Full instructions for the cultivation of the Sisal plant (*Agave sisalana*), as well as for the extraction of the fibre, were given in a pamphlet issued by the Department of Agriculture and Stock, which, however, is now out of print.

MR. ARTHUR ABBOTT, "Our Friend" in December, 1918, after having been the secretary of the British Chamber of Commerce in Brazil for nearly three years, has accepted the important official post of British Consul at S. Paulo, where he is now busily engaged with his new duties in H.M. service.

Mr. George Marr, who has been appointed as Mr. Abbott's successor, has therefore entered on his duties as secretary. He comes to the Chamber from the British Legation, after three years' service under Sir Arthur Peel.

* This number has no doubt interested many readers. The first article (pp. 109-118) deals with "The Correlation of the Strength and Durability of the Southern Pine." Then comes the article on coffee, whilst the last of the five, pp. 153-176, discusses, with carefully worked-out tables, "The Effect of Bordeaux Mixture on the Rate of Transpiration in Plants." The illustration given of the rotation table, or transpirotaplane, and the description of how it is used in the experiments made in connection with this last article, struck us as being very clever.



"Tropical Life" Friend.—No. 172.

MR. J. W. COOMBES.

Superintendent, Chingleput Reformatory, S. India.

REGULAR readers of TROPICAL LIFE will know the name of J. W. Coombes quite well, for we have often felt compelled to call attention to the excellent work that he has been doing out East; excellent not only as a benefit to the individuals who have passed under his charge and through that to India as a whole, but beneficial also to everyone of us as an example of how children can be and should be trained in contrast to the majority of those around them if they are to prove of the greatest use to the community at large. On this side, with so many children being forced by the mistaken educational policy of this country to become townsmen when we need trained agriculturists to produce more vegetable food and meat within the U.K. as well as in the Overseas Dominions and Colonies, it is pleasant to read the reports for the last ten or fifteen years of the Chingleput School outside Madras, and to realize that the inmates of a reformatory or industrial school have been raised socially by the work of its chief to such a degree as to make the boys of ordinary schools out there willing to meet them as rivals in competitive athletics and games.

In previous issues we have on several occasions called attention to the beneficial results of the work being done at Chingleput; this was especially the case in our August and September issues of 1916, when we wrote at length on the subject, and sent a substantial number of copies to leading people over here. Since then, as in their issue of February 27th last, the *Madras Mail* has also called attention to Mr. Coombes and his work, and told its readers that, "The reformatory at Chingleput, which has an excellent record to its credit in the reclamation and reform of juvenile offenders in South India, will soon undergo a change in its status and constitution under the Madras Children Bill, now pending in the local legislative council. During the thirty-one years of its existence it has attained the premier position

among the few institutions of the kind in the country. Its work has received commendation not merely from heads of departments in the Presidency, who have had occasion to watch its growth and development, but from experts in other parts of India during their frequent official visits to study its working as a model institution. To Mr. J. W. Coombes, who has been in charge for nearly twenty years, belongs the credit of having raised it to its present unique position. At the anniversary which took place on Saturday, the Hon. Mr. Davidson paid Mr. Coombes a tribute of praise for the obligation which he has laid the reformatory under by his devoted work for it and the juvenile population entrusted to his care. Though essentially working as a reformatory, to the juveniles trained therein the institution has been a sort of home where they received maternal care at the hands of Mr. Coombes and training in some handicraft to earn an honest livelihood in after life. Of 156 pupils, who had passed out of its walls in the three years previous to 1917, nearly 80 per cent. are reported to be following one or other of the trades to which they were trained. Only about 7 per cent. of these, apparently because they came of criminal classes, were re-convicted. But last year was a record one, in that there was not a single case of re-conviction. The reformatory has also contributed its quota of men and money to the cause of the war. It gave 65 combatants and 51 non-combatants, a creditable roll of honour inscribed on two boards, which were unveiled on Saturday by Mrs. Davidson amidst a fanfare of trumpets and flourish of bugles. Mr. Coombes, at a time when his services can ill be spared, will avail himself of long leave preparatory, perhaps, to retirement."

By later news culled from "Our Friend's" brother on this side, we understand that Mr. Coombes left the reformatory at the end of July, and was going to Kashmir via Bombay. He will probably be in England in November, and stay to complete his eighteen months' leave on this side. What will happen then has yet to be seen.

It will be seen in the photograph that "Our Friend" is wearing the Kaiser-i-Hind medal, bestowed on him by the Viceroy in January, 1917, in connection with his work at the reformatory.

As the *Madras Mail* (Chingleput, it may be remembered, is just outside Madras City) said at another time, "The test of all reformatory work is the extent and permanence of the reform effected. The ordeal comes when the boys go back to their home towns and villages. At one time re-convictions were as high as 45 per cent., but it has since dwindled for some years to only 1 per cent. Now, as reported by the *Madras Mail*, there was not a single re-conviction last year. A great achievement, and one of which Mr. Coombes may well be proud.

Every boy placed on his legs in this way is a double benefit to India and the Empire, for we need the help of all willing workers; we need it as never before, and for the same reason we do not want to be handicapped with criminals and loafers. Chingleput Reformatory has done a wonderful work in giving us those workers we need by improving the undesirable raw material out of existence. Truly, therefore, the head of the institution has been a real friend to the Tropics and so to TROPICAL LIFE.

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

OCTOBER, 1919.

Reconstruction and Chambers of Commerce.

THE NEED OF REFORM.

FOR a good many years past we have been asking for a radical reform in the policies and the personnel in some of our leading Chambers of Commerce. If drastic changes are needed in our Consuls and consular offices, they certainly are in some Chambers of Commerce. We have already written three articles on the subject, but never published them because it may have been that all the chambers were not equally inefficient, but the chief one we have had to do with has, on several points, struck us as being decidedly so. Here is an instance to show how unreliable the information published at times in the journal of a Chamber of Commerce can be for those who do not know the truth of the position.

The following paragraph appeared in the supplement of the journal of a leading Chamber, which now claims to have a membership running into 8,000 to 10,000, and whose publications therefore are very widespread, especially when one remembers the number of Chambers throughout the world each of whom probably receive exchange copies.

"A scheme has been framed by the Director of Agriculture of Madras and sanctioned by the local Government, for the opening of experimental stations on the West Coast of the province for the study of problems connected with coconut cultivation. It is true that the war has caused a postponement of the long prophesied boom in coconut cultivation, but the postponement is merely temporary. In the province of Madras the area under coconuts is 714,000 acres, while the exports of the produce of the tree from Madras ports alone had an average annual value from 1909-14 of £1,497,000. The internal consumption is also very large. Inasmuch as the copra from the west coast of India, commercially known as Cochin copra, still commands the highest price in the world's markets, it is high time that the question of the systematic cultivation of the tree in Southern India—as well as the development of industries relying on coconuts for their raw material—should receive serious and practical investigation. The Director of Agriculture for Madras is concerned more particularly with the cultivation of the raw product. Surprisingly little careful work, he says, has been yet attempted. Ceylon has started recently and the Philippines have also begun. Their work, however, amounts to little more than preliminary work on manures. Such books as have been published in England are adversely criticised as dominated solely by the idea of informing people what large profits are attainable. Systematic work is proposed on an inquiry into such problems as those connected with manuring, the effect of different manures on the yield of copra, cultural methods, the relative yield to be obtained from different varieties of coconut palm, and the improvement of the methods at present in vogue for the preparation of coconut fibre. With this end in view it is intended to start investigation stations where experiments can be made on new land where the seed will be planted *de novo* and on existing gardens in the various soils—there are four—in which the coconut palm flourishes in Western Madras. The sites chosen for the virgin gardens are in the South Canara district."

Those who know the history of the world-supply of coconuts will agree that Madras is even to-day very behind both the chief coconut centres, although we hear that Mr. H. C. Sampson is down there now in charge of the coconut industry, and we believe Mr. Sampson to be a good man for such work. But whilst the Philippines especially and also Ceylon have published excellent and exhaustive books and reports on the coconut from all points of view (our coconut shelf is filled with them) Madras so far as we know has only given us this one paragraph full of inaccuracies within recent years. In 1861—but that is a long time ago—Dr. Cleghorn, we believe, read a very useful paper on the "Coconut Palm and its Uses," before the Edinburgh Botanical Society, in whose transactions the paper subsequently was published, and in 1885, Dr. John Shortt published, at Madras, an illustrated monograph on the Coconut Palm. Madras so far as we know, since Dr. Shortt's monograph was published in 1835, has only given us this one paragraph. London, on the other hand, has published three standard books on coconuts, viz.: by Copeland, by Brown and Munro, and by Hamel Smith and Pape, all of which appeared before this paragraph was published. None of them preach big profits, and our book particularly warns the public against over optimistic statements, for Lord

Leverhulme reviews the position and shows, in his Preface to the second edition, how unscrupulous company promoters had been trying to mislead the public. He even reproduced our Editor's letter to the leading papers at the time (it was dated February 24th, 1913) warning the public against casual quotations.

Surely, in face of the above, we are justified in asking that during the period of reform and reconstruction which lies ahead of us, the personnel and the editing staffs of our Chambers of Commerce shall not be overlooked, for if we cannot have every confidence in them and in the information that they distribute widespread over the world we are worse off than if they did not exist at all. So far as coconuts are concerned, we certainly have felt very shy of trusting any information from such sources since the publication of the above extract was included simply because it appeared in a Government report. No trouble, even in London, was apparently taken to ascertain the truth of the stigma attached to "Such books as have been published in England," and so the statement was given still further publicity.

We are merely quoting this paragraph and pointing out the inaccuracies, but would like to add that we have a large envelope full of correspondence over the mull made in our possessions. We traced the information back to its source, and wrote to the various Government Departments as well as the chamber of commerce concerned. The latter to this day either does not realize the mull it made, or has not the grace to own to it. This fact has, not unnaturally, strengthened our beliefs that a radical change is needed in our chambers of commerce, and especially in their staff and leading officers. The secretary, especially, could well be a barrister, or man with university training, able and willing to lead the policy of the members, and not be merely an automatic machine for the use of the council. These are times for initiative, not blind obedience. It has proved so in war, and it is doubly so in matters of commerce. Mechanical action and help is out of date. Voluminous reports on paper are useless. Who has time to study them? Above all, when trouble arises, it is a mistake to preach the wrongs being done to the members of the chamber, they are already converted. One should preach rather to the press and to the public outside, who do not know details, and who sometimes never hear the truth. If the members of the London Chamber of Commerce had done this in connection with the Bird Plumage Bill, the opposition to the trade's scheme for the preservation and utilization of the birds never would have existed. It was a true case of a chamber doing a cause harm instead of good. We told them so at the time, but the members thought they knew better, and so, as can be gathered from an article to appear next month, the persecution of the trade still continues.

An article published by the *Daily Telegraph* puts the case against the chambers even more strongly than we do, and so we now feel justified in adding our say to that of our London contemporary, which pointed out in its third article on the subject, published August 26th., that in the United States and Great Britain, chambers of commerce are voluntary, independent associations, without subsidies or any official connection with the Government. Whether it is due to this attitude of aloofness, to this repugnance to anything in the shape of Government control, is impossible for us to say, but the

fact cannot be denied, that the chambers of commerce in this country have not played the part which they might in promoting British trade; and their power to influence the Government will be understood from the fact, as related in our first article,* that no heed has been paid to their separate and joint advocacy for the past forty years of a Ministry of Commerce.

"There are about 125 chambers of commerce in the United Kingdom, but the vast majority are relatively weak and unimportant. Indeed it would hardly be an exaggeration to say that *not more than half a dozen, if so many, can be said to count, or are in a position, beyond passing mere empty resolutions, to render any practical service to British trade and commerce.* Foremost among these half a dozen would stand the Birmingham Chamber of Commerce, and much of its activity is due to its very efficient secretary."

We can bear out this opinion as to the utility of the Birmingham Chamber of Commerce, though we are not in the position of saying to what degree the credit is due to the secretary, and what type of man he may be, but we do know that he agrees with us as to the great need that exists for the strengthening of our chambers of commerce as a whole, especially as their progress is so essential to the future commercial welfare of this country.

The Japanese in the Pacific.

WE hope all our readers studied what we had to say in our May issue concerning the Pacific Islands. We could have said, and will say some day, much more concerning them, as the many peoples who owe allegiance to the Union Jack do not appreciate these hives of production as they should do, and as other nations do, especially the Germans and the Japanese.

The behaviour of the Germans towards the Japanese after the Chino-Japanese war will rankle in the minds of the children of the Rising Sun for many years to come; the longer it does so the better for the world. Wherever it is to be a case of Junker or Jap, of Hamburg or Yokohama, we are for the Easterner every time; no doubt he has his faults, but he has some good points. So far as civilization is concerned, the Teuton has taken all the pains possible to prove he is nothing but a Teuton and never will be.

Both peoples have one point in common, a common point which in both cases runs on similar lines, although we have never heard of the Japanese betraying their hospitable hosts and acting the spy in the midst of social functions, often arranged in honour of these false friends, as we know the Germans have done, especially those of the ruling families and their entourage, the similarity between the two peoples is their wonderful powers of peacefully penetrating wherever they wish to go. They are inside and a fixture, whilst you believe they are only thinking of coming your way. In no centre, from many accounts, has the Jap penetrated more peacefully and more persistently than throughout the Pacific.

"There has been a quiet, unadvertised, but truly remarkable development going on in the islands of the Pacific in the last decade," wrote the special

* These previous articles appeared in the *Daily Telegraph* of August 8th and 20th.

correspondent of the *Times* (see their Trade Supplement for July 19th, p. 469). "The Japanese, who were little known in the Pacific Islands five years ago, having the advantage of much available shipping during the war and being able to supply large quantities of goods suitable for the Pacific trade, have scored immensely and promise by their energy to command the greater part of the whole of the trade with the Pacific Islands within the next five years. The advance of the Japanese in the Pacific during the war has been amazing."

Why has their progress been amazing? Because their system of trade pioneers and scouts* is so perfect and so penetrating, more so even than the German system because it is less noisy. In pre-war days the best of the trade was in the hands of the Australians. They deserved to have it for they had manœuvred for it unceasingly and nursed it judiciously when it started to grow. Their great competitors were the Germans who will come back, if not as Germans then as Swiss, or Dutch, or Spaniards, as any other people in fact but themselves. So they will elsewhere. They will insinuate themselves into everywhere and the Allies will allow them to do so. Already India and the East, where Japan secured a grip whilst the war was on, are speculating how things will go with Japan when the German goods come along. No one doubts but that they will come, and as it is in India so it will be throughout the Pacific. Who will win? We hope and trust the Australians again, and we hope it will be an Ally who is second and not a German, no matter how cleverly he is camouflaged as a "friendly" neutral.

Meanwhile, there is no gainsaying the fact that the outrageous prices asked over here for clothes, for boots, and a host of other things on the top of wages and salaries paid to men who do not deserve a fourth of what they receive is steadily breaking down the resentment of buyers against Germany, as they are inclined to wonder whether Huns and Bolsheviks exist only on the Continent. To what extent this needless cost will be allowed to continue no one can say, but it is a well-known fact that whilst most of us resent being swindled by an enemy, already discredited, we would rather that than be cheated by a supposed friend in our midst. Since this is so, employers and employed in the United Kingdom must hold their hand a bit if they wish to keep Germany at arms' length; if they do not, why did they fight her?

The Japanese, like the Germans, also leave us far behind in costs, so that both at home where we have the Germans so near to us, or out in the Pacific where we have the Japanese to compete against, the workers of this country must realize what they are "up against" both as regards goods to sell, and raw materials to purchase. If they do not moderate their demands, the Japanese will undersell us with the manufactured article and over-bid us when buying raw materials, especially as, in both cases, they have to pay so much less freight than we do; the cost is lower and the distance shorter.

Again quoting the *Times*, we are reminded that,

* See our remarks on the need of Trade Scouts in the August issue, p. 132.

"a great advantage to the Japanese is to be found in the higher wages paid to European masters and crews. The salary of an Australian shipmaster will range from £35 to £40 a month, and his keep; an Australian sailor gets £13 to £15 per month, and he must have every food luxury possible for his employers to procure, according to union dictation. A Japanese captain will pass rich on £4 to £6 a month; a Japanese sailor only receives from £1 to £2 a month, and he is contented, loyal, and efficient on a diet of rice and Japanese plums."

Altogether the *Times* has given us much food for thought in connection with the penetration of the Japanese throughout the Pacific. To this we have added the danger of needlessly high prices at home compared with the price of wool, hides, rubber and other raw materials. It will be a foolish man or woman who does not take heed and apply the remedy, otherwise our outrageous costs, owing to the "Vicious Circle," will certainly dull if they do not kill the energies and enterprise of those who guide our commerce and draw wealth from abroad to this country.

"The Fertiliser"—a new Fortnightly Journal.

WE have to welcome in our midst a new fortnightly journal dealing with the importation and manufacture of fertilisers and feeding stuffs. We trust the new venture will have a long and prosperous life. It will overlap with no existing paper so far as we know, and can often interlock with our work in connection with fertilisers, which is to tell planters and agriculturists how and when to use them after they are made. With *The Fertiliser* as its leading title and *Feeding-stuffs Journal* as a supplementary one, much good work can be done by such a paper in explaining the advantages of oil-cake made from tropical crops, as coconut cake, palm-kernel cake, ground-nut cake, &c., and so, by increasing the demand for these, improve their value to the mills and also to the producers in their turn.

Published by Messrs. Maclaren & Sons, Ltd., who already own the *India Rubber Journal* and the *Confectionery Journal*, which gives up so much space to the planters' side of the sugar and cocoa manufacturing industry, *The Fertiliser* is at present to appear fortnightly, and will cost the modest sum of ten shillings per annum post free.

Covering entirely new ground in many points, the new journal is intended for *trade circulation* only, and as such will cater for those interested in the production and distribution of the articles with which the journal deals. We hope that it will have a wide circulation abroad, especially in India, as well as over here.

AN advertisement in the columns of our contemporary *Sugar*, of Chicago, gives one a good idea of the many uses that rubber are put to on the modern sugar estate. These include rubber evaporator rings, filter press rings, diffusion battery gaskets, scale bumpers, strip rubber pump valves, conveyor belts, whilst the modern tendency to put a "bed" of rubber when possible under heavy machines to reduce vibration will become more common as the advantages of these "beds" become better known.

To the Editor of TROPICAL LIFE.

SIR,—Will you be good enough to inform your readers who have to do with stones, crystals, &c., that I am keenly interested in these articles as found in the tropics and sub-tropics, such as agates, onyx, cats'-eyes, moonstones, opals, jasper, jade, &c., &c., as well as crystals and rare minerals, and would greatly appreciate correspondence from anyone in any part of the world able to send specimens of the above for my collection? Tropical streams and rivers are generally rich in beautiful pebbles.

Full particulars can be sent to me, Wm. C. G. Ludford, Proprietor Four Oaks Spraying Machine Co., Sutton Coldfield, Birmingham, England.

MESSRS. GRIFFIN'S series of Technological Handbooks has received an addition to their number with Mr. H. Osman Newland's book on "Coconuts, Kernels, Cacao and Vegetable Oils," with frontispiece and eleven illustrations, price 6s. net. The book is likely to prove of use to those interested in the production of the above industries, also those who finance the undertakings as well as scientists and others who are doing so much to place the output of tropical crops on an assured and increasing basis.

CAN anyone tell us what the *Times of Ceylon* (weekly edition) has in its bonnet which has caused it to go out of its way to run down margarine in the way that it has done on p. 29 in its issue of August 5th. What harm has margarine done to Ceylon, has the industry not rather done much good to the island, and would it not have done still more so had the copra and coco-nut exporters there been able to ship their produce regularly during the war?

We have passed on the article referred to to our friendly contemporary, *The Margarine Journal* (37-39, Vernon House, Sicilian Avenue, London, W.C.1.), to answer, but arising out of a letter contained in the same issue on "The Coco-nut Industry," we cull the following: "It has been said that the exporters are making Rs. 80 per ton profit (R. = 1s. 9d. or 1s. 10d., we believe now), but taking the cost of bagging, cartage, lighterage and loss in weight at £4 a ton, I can see only a modest profit of 30s. a ton for the exporter." Another writer, in the same issue, speaks of the cost of the copra to the grower (who sells to the exporter), and says: "Capital expenditure per acre, Rs. 606, should, when all the trees come into bearing, with 1,040 nuts to the candy (560 lb. or $\frac{1}{4}$ ton of copra), and Rs. 30, working expenses, pay 30 per cent. with copra at Rs. 90 a candy (on August 5th, the date on which the article appeared, Rs. 114.50 to Rs. 115.50 had been paid)." The above allows 3,000 nuts to the acre, whilst it is claimed that the Straits from fully matured trees get over 5,000 nuts. This article contains much that will interest all coco-nut planters, but as the figures given are very elaborate, and as we cannot say whether they are correct or not, we think it better not to reproduce them here, but refer our readers to the original.

Trade, Politics, and Finance.

FINANCE, so far as planters and buyers of tropical produce are concerned, is very much to the fore just now, not because, as in the old days, the planters need to be financed, for it is all the other way now, but because of the big rises in exchange, and especially in the value of the rupee (through the rise in the price of silver for one reason), making it a little uncertain how this "world will wag" until rates become more normal again. Those having to send money for wages, &c., from this side are of course suffering badly. This tends to make producers either turn to the United States, where they get better results, or to sell locally, and then send their money to England and make a big pull on the exchange. It is a far-reaching problem, especially for concerns—sugar, tea, rubber, coconuts, cacao, &c.—financed from this side, but we trust that even with such cases a way out can be found where, by indirect payments, the heaviest losses can be softened down. Whilst the Indian rupee is over 2s., the Straits dollar remains around 2s. 4d. Is this a real or a fictitious value placed there by law? If the latter, is such a procedure beneficial or otherwise to Singapore and its children centres? If the former, cannot Ceylon, India, &c., do likewise? If it has not been beneficial to Singapore, why maintain fictitious values in one of the most, possibly the most, cosmopolitan of all the world's purchasing centres in times like these? We are no experts in connection with finance, and especially with exchanges, but we scan across the East and find Singapore looking "very comfy," so cannot help wondering why those adversely affected by the loss-in-exchange pest elsewhere do not also watch the Straits dollar, and ascertain how those centres have been progressing during the last six or twelve months as compared with themselves. It is a question that directly affects all users of tropical produce, but especially those who are not prepared to go to producing centres to make their purchases. A continuation of this rise in silver and of Eastern exchanges against us, must, so we take it, tend to draw buyers from the United States, Japan, Australia, &c., to the East, where producers and middlemen would be willing sellers to non-Europeans in preference in order to avoid the loss of exchange on goods sent to London to sell and to be drawn and remitted against on this side.

Colonel Amery, M.P., the Under-Secretary of State for the Colonies, paid Sir Francis Watts, D.Sc., the Imperial Commissioner of Agriculture for the West Indies, a very graceful but fully deserved compliment on October 15th, following a lecture delivered by Sir Francis, on agricultural development and its possibilities in the West Indies. After several questions had been asked, Colonel Amery also spoke with good effect on what one can look for now that we have Imperial Preference. We look for three things at least: (1) Agricultural colleges at the chief centres. (2) Larger central factories for sugar, say those able to make 20,000 tons and upwards, like the Usine Ste. Madeleine in Trinidad, so that the West Indies will be better able to compete against Cuban sugar which has such a heavy handicap in other respects. (3) For

large confectioners and big buyers generally of sugar and copra (or oil) to establish and finance ex-soldiers as tenant-farmers to produce supplies to be treated locally, and the sugar and oil sent over here to be used or otherwise handled by those advancing the money. Run on co-operative lines the tenant-farmers could, as time went on, become substantial shareholders in the central factory as well.

Messrs. Lever Bros. Ltd. continue to grow, and we congratulate them and the British soap trade generally on their having been able to buy out the Brunner Mond element in the soap trade. The last deal, said to run into £4,000,000, now gives the firm of Lever the dominating interest in two more leading soap works and their list now includes Crosfields, Gossage, Pears', Watsons, as well as Price's Candle Company. Producers of vegetable-oil will no doubt have noted these amalgamations which tend to facilitate purchases and also, it is to be hoped, will increase the demand from this side.

The Colonial Bank has had a good half year, and declared a 10 per cent. dividend. When the sugar industry in the West Indies is properly organized, and all the planters and cane-farmers can see their way to co-operate and run joint factories each with a capacity of 20,000 to 25,000 tons of sugar, in order the better to compete against Cuban sugar, then we shall see bigger dividends still, not only from the Colonial Bank but from all well-managed concerns connected with those islands.

Meanwhile banking circles in Japan seem to have been and still continue to be busy, and their tendency to expand more and more has been a prominent feature in the money market over there where so much is prominent. Leaving America to quarrel with our Eastern Ally over her treatment of China and Corea, and without pretending to exhaust the list of possible or actual extensions, we can report (on the authority of the *Journal* of the Japanese Chamber of Commerce, Yokohama) that, among others, the Yokohama Specie Bank, the Mitsui Bank, the Industrial Bank of Japan, the Tokai Bank and others, have already completed their extensions and are now considering or carrying out further plans. Probably, all the banks have a common working agreement so far as their overseas' policy is concerned, even if actual amalgamation has not taken place or is unlikely to do so.

Coming to market news on this side, we like the racy optimism of the City editor of the *Observer*, and agree with him when he says that shipping securities are good. If you doubt this, we would add, look at the prices for Royal Mail and Elder Dempster shares. Then again we agree that trade prospects are excellent for we know that they could not be better. The world is just dying to do business, but it needs its food, coal, steel, etc., to sustain it and work upon. Once these are adequate nothing will stop the rush, even raw rubber may go up to a decent price as it should do and as other tropical products have done. But "rubber is still Cinderella-like," says the *Observer*. "The market mopes by the cold hearth of chastened hopes while other industrial sections dance into favour . . . rubber awaits a fairy godmother to help it on its way." It is a good thing to help oneself if possible; knowing the Rubber Growers' Asso-

ciation one feels the task is not possible, and since this is so, it is all the stranger. The railway strike certainly did its best to help. The amount of rubber dust left on our roads during the strike week would have sent the price of any other commodity up 25 per cent. Why not rubber therefore? The *Observer* tells us that "Rubbers, i.e., shares, have benefited by the strike, and also by the 6s. income tax. Even those companies that have passed their dividends, so long as they are well managed—moderate capitalization per acre is the acid test—are attracting buyers, for rubber is one of the few articles, as already stated, which has not risen in price. Prospects, therefore, are good, and prospects do not pay a 6s. income tax.

Mid-October clear of the strike found people willing to trade. Coffee was not quite so firm, but prices are still wondrously good, with East India up to 152s. 6d. for good, bold Coorg for export, 145s. for Mysore, 136s. 6d. for middling Nairobi, and 144s. for good bold East African. Tea tends to grow stronger and stronger, and whilst all kinds are doing well, the cheapest grades get the most money in proportion; a peculiarity by no means confined to tea.

Talking of rubber reminds us that the *India Rubber Journal* are bringing out two special numbers that should be well worth having. These will be The Special Plantation Rubber Number and the Special Export Number. They are due out in November, so send in your orders to Shoe Lane, E.C.4, London, at once.

With sugar, White Natal is reported as selling at 100s. to 104s., Mauritius 102s. to 104s., and Trinidads at 100s. for spot, against 105s. for Canadian granulated, and 104s. for American, and yet, surely, the retail price is still under 8d. per lb. Cotton seems inclined to go up, and fully middling American was spoken of, on October 11th, as being worth 20d. to 21d. per lb. Manila hemp runs from 47s. to 52s. or 53s. Rubber is now about 2s. 3d. both for No. 1 Crêpe and smoked ribbed sheet, against 2s. 6d. for Hard Fine Pará, 2s. 4d. for Soft Fine, and 1s. 5½d. for Caucho Ball.

Coconuts in September were quoted at \$82 (over £17) per 1,000 f.o.b. Port-of-Spain, Trinidad, B.W.I., for selected nuts in bags of 100, but over here copra is quiet at £54 to £55 10s. according to growth, and Marseilles quoted no dearer for fair merchantable. Shellac is at 470s. for T.N. Orange, and 385s. to 390s. for Garnet A.C. Pigs' bristles sold up to 70s. per lb. for long Calcutta whites, if not higher. Ceylon coconut oil afloat is worth about £100, against £102 for Cochin, and £101 for first castor oil. Crude cotton oil is worth £85, and linseed oil £82 to £83. Tin has moved up to £282 to £283, and copper is at £104 to £105.

The following is a comparison of the principal points in the Bank of England returns at the present time compared with a year ago:—

	October 11th	1919	1918
Bank Bullion	...	£88,126,694	£73,109,006
Reserve of Notes	...	20,290,595	27,980,300
Private Securities	...	81,707,450	95,511,344
Notes in Circulation	...	84,405,790	62,796,035
Rate of Discount	...	5 per cent.	5 per cent.
Price of 2½ % Consols...	...	52	60½
Price of Bar Silver	...	62½d.	49½d.

The London Cocoa Market.

BY THE EDITOR.

COMMENTS continue to be made on the official stock of cocoa in the United Kingdom (over a million bags at the end of August, as stated in my last article), since reports from Liverpool have been complaining of the absence of adequate supplies of the better grades of Accras. This scarcity is certainly incredible. If the United Kingdom has a million bags, what does this stock mainly consist of, if not Accras, and if the bulk is Accra, surely there are some good to fine grades left? It is as difficult to believe otherwise as it would be to imagine that when the official returns say we have a million bags on hand, there is more likely to be half a million bags only, say 165,000 up at Liverpool, 135,000 in London, making 300,000 bags between them, and 200,000 elsewhere in the United Kingdom. Of course, if the Government says there are a million bags in the United Kingdom, there must be as many as that.

All the same the stock in London has been steadily going back. These notes were started before the figures to October 11th were published, but taking those up to October 4th, when London returned a total accumulation of less than 130,000, I have noticed that each week since the middle of August has shown a steady drop in the total stock until it was over 23,000 bags less than the stock of only six weeks ago, which was 153,143 bags, a fair-sized drop during such a period. On October 11th the London stock compared as follows:—

	1919	1918	1917	1916
London Stock, October 11th—	Bags	Bags	Bags	Bags
Trinidads ...	35,589	7,079	26,155	21,422
Grenadas ...	16,909	8,648	26,007	13,877
Other W.I. ...	7,949	1,704	25,655	21,815
British African ...	27,415	53,145	63,655	37,640
Portuguese African ...	12,754	39,663	12,384	20,528
Cameroons ...	3,093	1,853	11,083	1,044
Ceylon and Java ...	7,467	11,527	36,910	27,176
Guayaquils ...	9,018	16,689	48,049	37,030
Bahia and Brazil ...	2,486	1,651	6,155	13,595
Other foreign ...	12,871	7,302	8,790	10,508
Totals ...	135,551	149,261	264,843	204,635

The Havre stock, on the other hand, grows fatter and bigger, whilst London shrinks smaller and smaller. At the end of September the figures of the French port left the combined figures of Liverpool and London well behind, judging by their latest returns, say:—

	1919	1918
Havre Stock, September 30th—	Bags Value Fcs.	Bags Value Fcs.
Pará ...	18,684 203 to 207	830 148 to 152
Bahia ...	39,232 190 „ 207	2,974 136 „ 146
Venezuela ...	18,819 220 „ 265	5,294 145 „ 175
Trinidad ...	32,196 220 „ 225	8,065 146 „ 152
Grenada and O.W.I. ...	5,658 210 „ 220	13 144 „ 149
San Thomé ...	43,267 200 „ 210	404 140 „ 145
San Domingo ...	6,174 185 „ 189	397 135 „ 140
Haiti ...	20,837 163 „ 184	807 128 „ 140
Accras, &c. ...	109,153 180 „ 185	3,957 128 „ 135
Guayaquils ...	88,965 211 „ 216	5,461 145 „ 155
Others ...	3,474 —	1,634 —
Totals ...	386,459 bags	29,836 bags

The French deliveries for consumption continue on a satisfactory basis, all things considered, as the shortage of sugar and exchange tell so heavily against France, &c. During the seven months, January-July, some 26,535 tons were delivered for consumption, against 22,626 last year, and 25,818 in 1917. This year's figures, therefore, nearly reach 3,800 tons a month, or at the rate of 45,600 tons for the year; it remains to be seen what the final figure reached will amount to.

The *Confectionery Journal* of London for September 25th had an article, its opening one, entitled "The Day for Chocolate," that I would like planters and exporters abroad to have seen. It ought to give the consumption of cocoa a "leg-up," both with regard to the quality and quantity of the manufactured article ordered by the public. Taking a statement of Mr. J. Roberts, M.P., the Minister of Food, as his text, when that gentleman claimed that "Unless we increase our production of every commodity from coal to milk, we shall be doomed to higher and higher prices, and finally to social disaster," the writer in the London paper claims that the cause, or the chief cause, of unrest everywhere is due to loss of nerve, the *malaise*, according to the *London Observer*, that has settled on us. The remedy is a more liberal use of chocolate on all sides; for, we are told, "The first thing to be done is to feed ourselves better, to absorb certain foods which we have been short of in the past, and to substitute these for others that fill but do not nourish our bodies, and so have helped to sap our energies and thus cause us to work slowly and in a listless manner ourselves and to resent it when others offer to do more work than we feel able and inclined to do. There may be several ways of building up the wasted tissues and muscles of the human body, but in this paper we will discuss only one, especially as I honestly believe it to be the best of the bunch, viz., the Government or the Food Control departments throughout the country must encourage a much more widespread consumption of chocolate, with all the natural butter or fat in it, and if some extra is added, all the better."

The above extract was near the start; the following words concluded the article, and go to form an excellent testimonial from a firm believer in the value of cocoa as a food which nourishes and stimulates, and, whilst doing so, which soothes the nerves. "Under present conditions our rations, like those that exist in Germany among the bulk of the people who have lost and not profited over the war, may be sufficient for the moment to maintain us, but will they continue to be so to the family in straitened circumstances who could not afford meat, but might buy slightly sweetened chocolate at fair prices? Judging from all one hears, the future is doubtful, and so we shall be wise to draw more freely upon cocoa and chocolate in order the better to withstand the strain that will be thrown upon our constitutions, either by work or by infection, just when our powers of resistance are at their lowest ebb."

According to the American press, all the world wants American chocolate. I do not blame them when it is good, but the American chocolate I have seen and purchased on this side does not appeal to my

taste or eye as being any better, if as good, as what I have been receiving from English manufacturers over here and still wanted better. On the top of everything the American chocolate costs more. Now I see that Holland is out for American chocolate. Is not this rather a surprise? We shall be having Switzerland after Baker's Best, or Wilbur's Buds before long. The world certainly is growing strange. What can Holland want with American chocolate? I should have thought it had more than enough of its own. There is, however, a country called Germany behind Holland. Perhaps that answers the riddle.

All the running around for the American product should increase orders for the raw material from American buyers. No one has so far reported that it has been so, and, the American import figures, according to Mr. Frank G. Alden, published by *The International Confectioner*, of New York, shows that the American imports for January-July this year were less than those for 1918, and that both years were behind 1917. Here are the figures.

Cocoa arrivals in New York for the seven months, January-July, quoting Mr. Frank G. Alden:—

	1919 Bags	1918 Bags	1917 Bags
Trinidads ...	73,857	202,842	181,978
Africans ...	740,146	383,920	532,422
Bahias ...	262,634	361,162	264,938
Sanchez ...	179,288	145,196	257,400
Venezuelan ...	52,110	178,825	131,782
Guayaquils ...	199,111	213,189	243,587
Cuban ...	100	—	3,331
Grenadas ...	7,311	42,193	21,510
Para ...	4,500	16,415	8,658
Haiti ...	28,763	17,596	14,763
Surinam ...	537	11,717	13,029
Ceylon ...	4,359	7,506	1,720
Java ...	3,851	12,818	8,445
-Colombian ...	5,520	1,655	3,319
Maracaibo ...	4,284	1,245	5,667
Jamaica ...	2,942	4,569	6,461
Others ...	3,108	4,849	8,815
Total ...	1,572,421	1,605,697	1,702,825
Monthly average	224,631	229,385	243,261
Year based on } above	2,695,572	2,752,620	2,919,132
Actual imports	—	2,233,754	2,490,237

Of the Africans imported into New York practically the entire amount this year were Accras, viz., 738,146 bags, the balance, 2,000, being San Thomé. One wonders therefore what San Thomé has been doing with her cocoa; has she been sending it to Germany or where? In 1918, during the seven months, all the African, except 438 Cameroon, were also Accra. Evidently America has been putting out dark cocoa the same as we are over here. The same paper—*The International Confectioner*—gives the following note re Guayaquil, including the interesting one showing that Republic to be an exporter of chocolate to Europe, i.e., to Italy.

Ecuador exports of Raw Cocoa—June—

	lb.
Chili ...	193,510
France ...	898,302
Italy ...	621,386
Spain ...	1,248,054
U.K. ...	726,390
U.S.A. ...	3,546,737
Total ...	7,174,379

Besides the above, 64,353 lb. of chocolate were exported to Italy.

I have to report that Mr. Geo. S. Hudson, of Errard Estate, St. Lucia, died last month. From time to time we mentioned his illness, but still hoped that he would shake it off; it was, however, to be otherwise. He was a help and a credit to the Empire. I only hope many will follow his example.

The Board of Trade figures for September show that we ended the third quarter of the year with a stock of 68,950 tons, against 73,500 tons at the end of August, or 4,500 tons less. As this means, at 15 bags to the ton, only 67,500 bags less, the remarks I made at the start of these notes can still be said to hold good. There is, apparently, still over 700,000 bags elsewhere than in London and Liverpool, if these figures are correct. Here are our returns in full:—

Raw Cocoa Movements in the U.K.—

	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Sept. 30th. Tons.
Jan.-Sept., 1917—	54,378	35,408	4,684	56,650
„ 1918—	19,016	45,834	584	16,150
„ 1919—	102,112	45,088	11,980	68,950
Incr. 83,096 Decr. 746 Incr. 11,396 Incr. 52,800				

The receipts during September were less than last year, 4,798 tons against 6,193, but the deliveries were heavier, viz., Home use, 5,375, against 3,840, and exports 3,828 tons against nil. Of the above, three-quarters of a year's imports, i.e., 102,112 tons, 68,800 tons, or nearly two-thirds, were West Africans, whilst the West Indies contributed 12,175 and Ecuador 9,070 tons.

The Bahia movements for May-August have come to hand, and still show exports far above receipts. I will give both this time, so that you can compare the two side by side. The exports for the four months—May-August, 1918—were 199,359, against 194,861 in 1917, and 159,956 in 1916, but the exports for 1915, which I show in detail, rival this year's, and even leave them behind:—

Bahia Figures—	Receipts 1919 Bags	Exports 1919 Bags	Exports 1915 Bags
May ...	6,227	107,540	30,598
June ...	22,721	23,198	51,038
July ...	41,285	41,533	72,884
August ...	74,691	47,707	83,114
Total ...	144,924	219,978	237,634

The deliveries for home consumption in the United Kingdom are certainly good, since no war has been raging (or at least is supposed not to have been) this year and some millions of men have been demobilized. Of course the Navy's requirements may still make the senior service a sure customer for some time to come, but for all that, producers of cocoa, as of any other edible crops, must now start and take stock of the world with a view of estimating how the demand for the product (in which they are interested, as tea, cocoa, sugar, rubber, coffee, &c.) stands to-day compared with what it was before the war, and then to try and gauge how it will tend for next year. It is the demand for next year and the year after that

really matters to the planter of to-day, for buyers look ahead, and so it behoves the producers to do likewise and be ready to "fence" the buyers, tale for tale, *re* how trade will tend when the two start sparring for future transactions. If cocoa is like tea, then we have a favourable prospect ahead, for tea experts claim that the United Kingdom is taking 9 lb. per head of tea, against 6½ lb. before the war, in spite of the price being double for the popularized article. What becomes of all the cocoa taken into consumption, how much goes for exceptional uses as the Navy, &c., and how much for ordinary household use; and what proportion in both cases is used as a beverage, I cannot say, but I do claim that the use of tea is much encouraged by the dearness of sugar, and that if its consumption has increased during the war, when sugar has been four times its pre-war price, and always restricted, cocoa is used less than it would have been had sugar been plentiful and at a reasonable cost. All this and much more must the cute planter have in his mind's eye when scanning the future for news.

And now for prices; much business has been done privately, much more, I believe, than has been reported, but known sales spoken of in London and Liverpool during the past month have topped 10,000 bags a week, I believe, and on the basis of such transactions I would quote values to-day as under:—

Trinidads from 124s. to 125s. for home use, and up to 128s. for export.

Grenadas up to 126s. for the best marks, and down to 118s. for common unfermented. With this cocoa, no difference seems to have been made in prices paid for the home trade and export.

St. Lucias also have been selling up to 126s.

Jamaicas.—Good marks sold at 124s. to 125s. for export, and 122s. for good fair.

Accras show a big difference, for the home trade has not, apparently, passed 92s. for what they have purchased, and 90s. has, as a rule, been their top figure, down to 87s. and 88s. for fair. For export, as much as 104s. and 106s. has been paid.

Bahias have been selling at 118s. for home trade to 122s. for export, and even 124s. for really superior.

Costa Ricas last realized 122s. and 123s., extra bold 171s. 6d.

San Thomé must be in the United Kingdom in comparatively large quantities, but you do not hear of sales. Perhaps a recent big arrival went direct to the factories. The value should run from 120s. to 123s. for good to fine, judging by the sales of *Bahias*.

Cameroons changed hands at 116s.

Demerara sold at 127s.

St. Vincent realized 123s. 6d.

Puerto Cabello.—Boldish fair, 155s.; good bold, 165s.

Ceylons.—Good bold, 170s. to 175s. 6d. for small lots.

Javas have beaten all records, having sold up to 207s. 6d. for very bold, less bold 201s. 6d., others *pro rata*.

Guayaquils have been selling on a big scale and now are reported scarce. Rates in Ecuador are said to be equal to 140s. landed for Arriba. Sales made include Arriba up to 135s. for home use and 127s. for Machala. Previous sales, including a parcel of 5,000 bags, were at 128s. to 133s. for Arriba and 129s. to 130s. for Machala.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 11.]

NOVEMBER, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,
DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:
"CINERARY, LONDON."

Telephone:
LONDON WALL 3151.

The London (1919) Motor Show.

MOTORS V. LIGHT RAILWAYS IN THE TROPICS.

THE enthusiasm with which Sir Owen Phillips spoke, as chairman of the West African section of the London Chamber of Commerce, of the possible advantages, as regards running-costs, of light railways, especially one particular make, should cause motor manufacturers to "sit up" and realize what they are "up against" in the Tropics where the demand for cars for passengers and lorries for transport promises to be one of the features of the trade in the near future, provided that maintenance and running costs are favourable. The success of the motor, especially the transport motor, will depend therefore on whether it can compete favourably with the light railway, cost for cost, and comfort for comfort, from beginning to end. Each can claim many advantages; the great query is, which can claim the most?

Those who had any life left in them when they survived the process of being squeezed into the first post-war motor show at Olympia—for it is said that during the eight days the Show was opened over a quarter-million of people paid for admission, or more than 30,000 per day, of whom the bulk seemed to go early and remain for the best part of the day—had much to learn when they caught sight of an engine or the ear of an attendant or demonstrator at the stands.

We were there many hours, but it was hard work to get a "look-in," a rugger-scrum right through, but it was worth it. There were "tons" of "new" stuff" to learn and we at times were able to grab a few crumbs. What one could have learnt and written about this wonderful show we shall never know, perhaps it is as well because then we shall not regret what we have missed.

From what we could see and did hear about the exhibits, we would claim that quantity-production and standardization, with improved outer appearance, more perfect springs, greater comfort and increased accessibility to all parts, will be among the leading features of English cars to be placed upon the road between now and 1921. This will be good news to our readers in the Tropics, for accessibility is absolutely necessary, unless cars can be made to promise not to "buck" in the hottest and most exposed portion of the road, otherwise it is back-breaking work to put things right. We are also promised greater accuracy in castings and parts generally and this means easier running, less wear and tear, and hence longer life to the engines and cars. The accuracy demanded of the makers during the war when turning

CONTENTS.

	PAGE
The London (1919) Motor Show	169
Vegetable Oils and the Expansion of Lever Bros., Ltd. ...	170
"Tropical Life" in Russia	170
The <i>Times</i> and the Tropics	171
Agricultural Progress in the Tropics	171
Development Prospects in West Africa and the West Indies...	172
The Fermentation of Cacao.—Part 1	173
Nicaraguan Cacao in Ceylon	174
"Tropical Life" at the Play	175
"Tropical Life" Friend.—No. 173	176
The Brazilian Meat Trade	177
Economic Zoology—The Plumage Trade	178
Trade, Politics and Finance	180
The London Cocoa Market	182

out shells, motors and a host of other metal-work munitions of war has, of course, proved an excellent school for increased accuracy and those who buy British cars will get the benefit. The influence of the delicate constructionship in airship work is, we believe the cause of the much neater finish, of the introduction of newer and lighter metals and probably of new alloys which weigh less and last longer. Lower the weight and again wear and tear, and also cost of petrol, is reduced; here again therefore can tropical and colonial buyers expect to benefit. Only an expert can tell you exactly what the work done with aluminium, and the experience gained in fine "craft" work during the war will leave in the way of influence upon the coming British motor industry, but the most casual observer must agree that that influence will be considerable. It is certain to cause us to come right to the fore as builders of reliable cars and with increased standardization, leading in its turn to quantity-production, our prices will prove to be competitive and to cause other countries to look to their laurels if they mean to win against us.

This little wind-up may sound American in its optimism; if so, what is the harm? We have heard so much of what America can do in the way of almost "giving away" cars that it has at times made us wonder if any other country could possibly compete with our cross-Atlantic cousins. Now we have visited Olympia we at least feel willing to back the British car, be it the most princely of makes or the most popular. America has yet to go through her sea of troubles, of coal and metal strikes and increased costs, and so what may seem very formidable on paper is likely to prove "overcomeable" in fact, once both master and man put their shoulders to the wheel over here and turn out the cars as they can do and—we feel sure—will do to challenge the whole world.

Vegetable Oils and what can be done with them.

THE DEVELOPMENT OF LEVER BROTHERS, LTD.

THE prospectus issued by the above firm early this month, when applying for another £4,000,000 of capital, contains much information that will prove both of interest and use to producers and traders in all parts of the world.

To begin with, the total authorized capital now amounts to £100,000,000 returning dividends from 5 per cent. (the cumulative first preference shares of £10 each) to 20 per cent. in three cases, covering a total authorized capital of £30,000,000 of which (latter) however, only £800,000 have been issued and are fully paid. Including the £4,000,000 now asked for, £23,280,392 5s. have been issued and fully paid up, or nearly one fourth of the total authorized capital as against the formation of the present company in 1894, with a capital of £1,500,000—which was considered a big amount for "mere soap works," at the time.

Messrs. Lever Bros., Ltd. state that they hold interests in over ninety associated companies, and this is apparently exclusive of Price's Patent Candle Co., Ltd., Joseph Crosfield and Sons, Ltd., and

William Gossage and Sons, Ltd., which are now being taken over.

The following figures, we are told, show the certified growth of the business of the Company during the past six years:—

Year ending Dec. 31	Paid-up capital	Dividends to Shareholders and co-partners	Rate of ordinary dividend
	£	£	
1913	11,713,424	839,891	15 per cent.
1914	13,247,598	970,773	10 "
1915	14,001,838 5s...	1,092,823	10 "
1916	14,023,518 5s...	1,141,175	10 "
1917	15,202,799	1,325,530	15 "
1918	17,065,340 10s.	1,547,635	17½ "

"Tropical Life" in Russia.

As is only natural, those who did their best to push the welfare of the Empire before the war are continuing to do so now. Here are some extracts from the letter of one of our correspondents who used to be in South Africa, where he was interested in fertilizers and agriculture. He first went through the South-West African campaign, and then joined up on this side as a private. Now, although he could have gone back to mufti he is still helping us, as others should do, to fight German influence among the rabble that is overrunning Russia apparently under the directions of the Jews. The letter was never written for publication, so we can only give extracts, but these will show what a task lies ahead of civilization before trade routes can be open and free across Western Europe and far into Asia. What difference to tea, rubber, cacao and other planters the upset in Russia has made, thanks to Trotsky—who, it is said, has recently been decorated with the order of the Red Standard—and his friends we can only conjecture. Those, therefore, who blame us for wanting to help Russia to settle down would do well to get news from personal friends over there before giving an opinion. Opinions may differ as to how the help can and should be given, but we must be all agreed that, left to herself, Russia will go from bad to worse. Our friend writes:—

"I have to pass through Poltava, which town is, I hear, in the throes of a revolution of some sort. Anyway, robbers are there who make a point of wrecking trains, robbing and killing strangers, whilst others in bands of from twos and threes, to those which number thousands, are rife everywhere, and one has to take pot luck. Food is scarce, and the purchasing value of the rouble, which was worth up to 2s. 1½d. before the war, is now worth but little more than a farthing. For instance, at Kiev recently one man paid roubles 600 for a very poor dinner; for, although the official rate of exchange may be put at roubles 400 to the £, I believe that the commercial rate is about roubles 600.

"I travel with a Primus stove, a supply of 2 lb. or 5 lb. of tea, some sugar, tinned milk, bacon, oatmeal, biscuits, &c. My Russian servant is very useful. I rather fancy he used to be a Bolshevik. I wonder what his real views are now. We had a few cold days recently, but it has turned wet and muggy.

The real cold comes later. There are usually about 400,000 people here, but at present there must be a million on account of the advent of refugees. The place was liberated from Bolsheviks about five months ago. They murdered most of the decent people who could not escape. The tales of the French Revolution sound trivial compared with all that these poor non-Bolshevik Russian people have had to suffer. Half of the better class people are dead—tortured and otherwise foully murdered. The leaders of the Bolsheviks are Jews, and from things I have heard and seen, I am beginning to understand how and why the Russians hate the Jews. The Bolsheviks desecrate all Christian churches, but—a significant fact—never violate synagogues.

“The Cossacks, Don, Kuban, Ural, Caucasian, &c., all a very wild lot, are about here in swarms. They are fighting on General Denikin's side. Their dress is very picturesque, and they are always armed to the teeth. I have been through the Don Country, all agricultural and open, not a hedge or tree for miles, except a few thin plantations near the railway to prevent the snow from drifting and blocking the line.

“The situation out here is very complex, and I am only beginning to grasp it. Apparently there are three parties: (1) General Denikin's forces; (2) the Bolsheviks; (3) a brigand named Patlura (?), who wants little Russia for the little Russians, and is fighting both Denikin's and the Bolsheviks. Besides these, there are bands of brigands, Green Guards, &c., who are behind Denikin's lines, and whose hands are against everybody, and who do all the train-wrecking and killing they can.”

The “Times” and the Tropics.

WE feel it to be no breach of confidence to report that our Editor has undertaken to write a series of twelve or thirteen articles for the agricultural section of the Spanish edition of the *Trade Supplement* of the *Times*. The series will, it is hoped, include articles on choice cacao cultivation, already in print, sugar-cane cultivation, vegetable oils, fibres, maize, pasturage improvement, cotton, coffee, &c. Many leading authorities have offered to collaborate with us over the articles which will we trust benefit the trade of the Empire as well as increase the prosperity of the Spanish Republics.

Two friends of *Tropical Life*, Miss L. E. Elliott (see our issue for May, 1918, p. 72) and Miss E. A. Browne (January, 1917, p. 8), are taking a prominent part in the useful propaganda work that *The Times* is carrying out in Latin America, in equatorial Africa and elsewhere. Discussing the situation with Miss Browne, over a cup of afternoon tea at “Violet's”—that well-known and cosy sanctum within a stone-throw of Mincing Lane, where Peter looks after you and serious men discuss rubber prices, insurance rates, exchange and other troubles over their coffee—we were surprised to learn what a wide-spread network had been thrown around Latin America and the tropics by Mr. Shel-drake, the Editor of *The Trade Supplement*. We were glad to hear of this for we feel that nothing but good can come from such help during the trying period of

reconstruction and trade-development which lies ahead of us.

Speaking of the share that “Our Friends” are taking in this work, the *Times Supplement* recently told its readers that whilst a special Commissioner of the *Trade Supplement* has been in the United States for several weeks, “another member of our staff, Miss L. E. Elliott, is on the eve of leaving for South and Central America on an extensive trip. Miss Elliott is an English lady who has travelled in every part of the sub-Continent. Everyone interested in Latin America has read her ‘Brazil, To-day and To-morrow.’ Her first contribution to the *Times Trade Supplement* was on the occasion of our special Brazilian Section in October, 1917. Subsequently we invited her to join our staff in London, and she was largely responsible for the Latin-American Section issued last May. Her work in South America on the present occasion will be two-fold. She goes out to report on trade conditions for the benefit of our British readers, and also to prepare the way for a monthly Section printed in Spanish which we shall incorporate in the *Trade Supplement* at an early date. The object of this Section is to give authoritative information concerning the progress of British industries. It will be circulated in Spain and Latin America, and for some time a special staff has been engaged in the preparation of what we trust will prove a really useful effort to expand British overseas commerce.

“Another remarkable woman—Miss Edith Browne—who has explored the world from China to Peru, leaves next week on a mission to West Africa. Miss Browne is on this occasion commissioned by two great commercial houses, but she will contribute exclusively to the *Times Trade Supplement* articles on the general trade outlook. Miss Browne is known to a great number of business men through her association with several trade exhibitions.

“So much is made by various organizations of the fact that they have representatives abroad that it may be well to remind readers that no organization in the world can compare with *The Times* in the extent and character of its news collecting ramifications all over the globe. Through this unique organization the *Trade Supplement* is in touch with every market. It enjoys the advantage of getting first-hand news written by men whose daily work brings them into direct touch with the most authoritative sources of information. It has its own commercial correspondents and when necessary is ready to despatch special writers to any part of the globe.”

Such help ought to make things “hum” between Spanish America and this country. We hope our readers will be liberal in their support of such enterprise to help develop the trade of this country and Empire throughout the tropics.

Agricultural Progress in the Philippines.

THE SEVENTEENTH ANNUAL REPORT OF THE
BUREAU OF AGRICULTURE.

THE above report for the year 1917 is worthy of a prominent place in any library with books on tropical agriculture, on account of the information it contains

and also and especially because all the facts and data published are founded on actual work done and done properly on those up-to-date lines which all centres will have to adopt, sooner or later, if they wish to succeed.

Special features include details of how the locust pest was eliminated, a condition of affairs never before attained. Then a section tells of the satisfactory progress made in the inspection and grading of the fibre and installation and use of stripping machines. Increased prosperity came to the farmers through the high prices paid for their crops.

Coming to details, the total coconut crop in 1917 is returned as having been 887,000,000 nuts to say nothing of those lost through the production of 42,600,000 litres of tuba or toddy. 63,360,000 nuts were consumed locally as food, leaving just over 800,000,000 for copra and coconut oil from which 186,227 tons (of 1,000 kilos) of copra and 2,600,000 litres of oil were produced. The sugar crop came to 365,000 tons of crude sugar and panocras, whilst of tobacco there were 47,000 tons, of maguey fibre 23,269 tons (maguey = *A. Cantala*), against 690 tons only in 1904 and 15,686 tons in 1917. Against the total production of all fibres (Manila, sisal, maguey and zapupe) of 1,305,152 bales, in 1916, 1,406,983 bales were produced in 1917, of which 1,291,851 were Manila fibre. We shall return again to the subjects of coconuts and fibre in the Philippines, but now must conclude by saying that (in 1917) about 600 tons of cacao and 800 tons of coffee were produced in the Philippines.

Development Prospects in West Africa and the West Indies.

SPEAKING as chairman at the 163rd half-yearly general meeting of the Colonial Bank, Mr. Charles F. Wood called attention to the wonderfully prolific and, therefore, profit-bearing resources of the West Indies that still await full development. The following extracts from the speech are worth noting:—

SUGAR.

With the present price of sugar, greater attention is likely to be given to its cultivation in the areas favourable to such production, and it will be interesting to see how far bananas will give place to sugar in Jamaica. Good prices are being realized for sugar estates and sugar. A dyewood and chemical factory has been completed in Jamaica by a British firm. Speaking to you six months ago, I expressed the hope that the coming Budget would establish a measure of Imperial Preference. This hope has materialized, and with the help afforded in this way the West Indian sugar growers should again reach their old prosperity before the advent of the subsidized beet sugar of the Continent. They have now an opportunity and an incentive to increase their production of this commodity, which, with its by-products of rum, molasses and syrup, is one of the staple products of the West Indies. The main source of sugar supplies for Canada is drawn from the British West

Indies. With the stimulus of Imperial Preference the Mother Country will compete for these supplies, but the Islands and British Guiana should be capable of expanding their production to meet the chief requirements of both markets. Prospects for the current year are good, and some Islands anticipate a bumper year. Labour troubles, which are world-wide, are causing some uneasiness and difficulty. In this connection I may mention British Guiana, a country larger than Great Britain, with a population of only 312,000, where the lack of labourers is handicapping very seriously the progress of the district. This is a country of boundless opportunity, which at present is limited by lack of sufficient labour. If labour, backed by settlers and capital, can be provided, this Colony should become one of the greatest sugar producers in the Empire. In addition there is a vast hinterland, where the timber resources are great and where cattle ranching should prove a success, but these industries depend on improved communication. As you know, an influential deputation from British Guiana came to London recently to lay before the Imperial Government and the country the needs of the Colony. It is satisfactory to note that in these days, when liquid fuel is so valuable, Trinidad, for the year ending 1918, shows an increase in oil production of 30 per cent. over the previous year. Investigations are in active progress in Barbados and British Guiana. Should the results be successful, it will provide another industry which is particularly desirable, since these places depend so much at present on the one product of sugar. The United States of America are taking an increasing interest in the West Indies, and competition for the trade is very keen.

BANKING.

In my speech for the previous half-year I mentioned the possibility of competition by American banks, and since then an American bank has established a branch at Trinidad, whilst others are projected in Jamaica and Demerara. I said at the time that we did not fear fair competition, but that I was strongly of the opinion that American banks operating in British territory should suffer the same disabilities as New York Banking Law imposes on British banks operating in New York. Our representations have, I am glad to say, already borne fruit in two ways. Legislation has been drafted, the effects of which will be to put those American banks on the same footing as British banks operating in New York, and the Federal banks in the United States of America are beginning to realize that their Banking Act is perhaps a two-edged tool. It is interesting to note that other countries, as for instance the Argentine Republic, are contemplating taking similar action to our own. Another tropical product in which our districts are largely interested is cocoa. We have long been familiar with this product, which is an important export of the West Indies, particularly of Trinidad, followed by Grenada, Jamaica, St. Lucia, and Dominica.

THE GOLD COAST COCOA INDUSTRY.

Now, however, our greatest interest in cocoa is provided by our recently established branches in

West Africa, which centre is the largest producer in the Empire (and of course in the world, Ed., T.L.)—the Gold Coast Colony. Nigeria also exports cocoa in increasing quantities. The United States of America is the greatest consumer of the world's cocoa supplies, and it is interesting to note that an American firm is considering the permanent establishment of a direct line with West Africa. Before the war Germany was a very large consumer, and with the reopening of the world's markets the prospects for the cocoa industry and for the Gold Coast Colony, which depends so much on its cocoa production, are very bright. The urgent needs of the Gold Coast Colony are improved ports and transport facilities. The cocoa industry is a native one, and though defective methods are naturally still in vogue, the output has increased enormously during the last decade. In this connection the appointment of General Guggisberg, C.M.G., D.S.O., to succeed Sir Hugh Clifford is interesting. General Guggisberg is not a stranger to the Gold Coast, and he continued a very excellent practice when last month he conferred with the West African Section of the London Chamber of Commerce. It is to be hoped that this example will be emulated by others. Much good can be done and much time and money saved when the Government officials and business community can get together and discuss ways and means of developing the territory in which they are both particularly interested. The new Governor regards the question of improved railway and road facilities and the making of a deep sea harbour among the most urgent items of his programme, and though the capital expenditure will be heavy I am sure it will be well repaid. The hindrance and loss of trade owing to existing facilities, or rather lack of facilities, are enormous. As indicated in the Report, the shipping facilities from the Coast have considerably improved, and it is creditable to Messrs. Elder Dempster & Co., Limited, that sufficient tonnage has been forthcoming to move the arrears of the previous crop in addition to the last crop. Turning now to Nigeria, it is a matter for congratulation to the proprietors of this bank that Sir Hugh Clifford, K.C.M.G., has gone to Nigeria. You have a number of branches in this colony, and under the intelligent and sympathetic guidance of Sir Hugh Clifford, you can count on the continued prosperity of this enormous tract of country. But here again a great expansion of exports of its varied products is limited by lack of proper communications. In fact, the need of all the West African colonies is roads, railways and harbours. Naturally, the task of providing satisfactory communications is a big one, and one that will take time. To meet the growth of business, arrangements have now been made to increase at Head Office and London Branch accommodation by taking in No. 30, Gracechurch Street, and, in view of the existing congestion, and to allow the bank to further expand, the additional room will be very welcome. Plans have been approved for the erection of new and more commodious premises at Demerara and Sierra Leone. At Lagos the necessity for premises more fitting its importance to the Colony and the business of the

bank is urgent, and the matter is having the attention of the Court. The new premises at Kano are now in use, and those at Ibadan are almost completed, and in view of these various extensions I feel sure you will approve of your policy in allocating £20,000 out of this half-year's profits to writing down premises account. Since the last meeting, branches have been opened at Coomassie, Winnebah, Koforidua and Nswam in the Gold Coast Colony. A branch has been established at Victoria in the Cameroons. There are now twenty-nine branches and agencies in the West Indies and eighteen in West Africa.

The Fermentation of Cocoa.—Part I.

OUR articles in the August and September issues on the above subject, have caused us to have had the pleasure of receiving several letters and essays on the subject.

Mr. William Fawcett, B.Sc. (who was in charge of the botanical department in Jamaica for a number of years, and who was good enough to act, with Dr. Dekker, of Holland, as judge in connection with the Prize offered through *Tropical Life* for the best essay on the subject), wrote as follows:—

"I cannot quite realize your difficulty about air, or rather oxygen, reaching the interior of the cells of the bean as mentioned in the footnote. It is dissolved in watery substances, I presume, and permeates through the skin. It is not necessary to empty the cells even partially."

"When cacao beans are massed together, fermentation of the slimy covering takes place. The process of fermentation causes a rise in the temperature, and a change from slime to a watery liquid. The cacao beans are living seeds, and the increased temperature accompanied by moisture which can permeate through the skin of the bean, starts germination, as in all seeds. There is first a development of enzymes, then the enzymes start a catalytic action on the reserve materials in the seed, namely the starch and the proteins. These are broken down into simpler compounds, capable of diffusing to where they are required for the growth of the embryonic plant. When malt is made from barley, the seed is allowed to develop so far that the primary root and the primary shoot push out of the seed skin. This is necessary in order to produce the changes of materials required for the making of beer. When this change is reached, the seed is killed by drying. In the case of cacao the development is checked sooner by the increasing heat brought about by the fermentation of the slime, and the seed embryo is killed before the primary root and shoot have grown longer. The enzymes are not killed, and continue their action, until the end of the fermentation, and probably during drying."

Mr. A. W. Knapp, of Messrs. Cadbury Bros., Ltd. wrote at length on the subject in four different letters of which the first, commenting on Mr. Brill's article, ran as follows:—

"Many thanks for sending me a copy of Mr. Brill's paper on the 'Fermentation of Philippine Cacao.' I am glad that you have seen your way to publish this paper. It is most interesting, though rather difficult, reading. Mr. Brill is one of the few scientists who is carrying out

constructive research in cacao fermentation. Having determined that the enzymes present in the fermenting bean are casease, protease, oxidase, raffinase, diastase, invertase and emulsin like enzymes, he proceeds in this paper to make some preliminary investigations to determine the causes of the various changes which occur in fermentation. As his experiments are performed on small quantities in glass beakers, caution must be observed in considering how far his conclusions apply to the ordinary fermentation in which hundredweights are fermented together at a time. The highest temperature which his beans reached was 45°C . whereas in the ordinary fermentation (as practised in Trinidad) I found that the temperature reached 47°C . in three days, and was 49°C . by the fifth day. It is probable also that it is due to the conditions under which he worked that in some experiments he obtained sprouting, especially with Forastero beans. The danger of this is not likely to occur in practice, because the temperature normally rises sufficiently high to kill the germ and render sprouting impossible."

"It is interesting to note that by no trick or variation did he obtain better results than if the beans were allowed to undergo their natural fermentation. I believe this is the more usual experience of experimenters. Mr. Brill disagrees with Sack's claim that the stimulating principle in cacao (theobromine) is increased by fermentation. I have myself made experiments on this point and have found no evidence that theobromine is increased by fermentation, and I should state definitely that there was no change in the theobromine content, only I am not absolutely satisfied with the delicacy of the method commonly used for estimating theobromine."

"Everyone who has noted the difference between the cheesy fracture of unfermented cacao and the crisp break of fermented cacao, will be interested in Mr. Brill's suggestion that this is due to a change in the character of the cacao starch, but whether due to the production of a sugar or a gum (or both) he does not state. One pictures the bean in the wet condition saturated with the gummy solution, which on drying gives a brittle gum, and thus gives the bean its short, brittle break. It seems to be his belief that fermentation is the joint result of the reaction of the yeasts and enzymes; this is in general accord with the data which has so far been published on this subject. It renders necessary the revising of an old suggestion, I mean the suggestion made by scientists that the bean should be sterilized so that fermentation could then be made to run under control with special organisms in the right direction. Because in sterilizing one would kill not only objectionable organisms but also the enzymes which carry on part of the fermentation process. I still think, however, that the sterilizing of the liquid, which runs away from the beans, by boiling is worth consideration if ever use is to be made of the 'sweatings.'"

(To be continued.)

Nicaraguan Cacao in Ceylon.

BY THE EDITOR.

REFERRING to what I had to say in the opening paragraphs of my August cocoa market report concerning the Ceylon-Nicaraguan Cacao which had just been

sold at 193s. 6d., and set me wondering when and how this choice growth found its way to the Island of Spices, Mr. Knapp, of Messrs. Cadbury, again came to my rescue, first by sending a copy of Paper No. 407, of The Trinidad Agricultural Society, dated February, 1910, which deals with the subject and also an introductory paragraph of his own in which he (Mr. Knapp) points out "it is well known that they grow Nicaraguan cacao in Ceylon. According to Wright's book, which I take to be still the best authority for Ceylon cacao, their Nicaraguan type is *Criollo*, in particular *Criollo Amarillo*. It is evident from the Ceylon cacao which we see in England, that the trees there yield every possible gradation from *Criollo* to *Forastero*. I do not think that Alligator cacao is grown in quantity in Ceylon, and hence fail to see how Nicaraguan Ceylon can be anything but *Criollo*. It was, I think, Hart, who on examining Nicaraguan *Criollo* suggested that it may have hybridized with *Theobroma Pentagona*, but never decided the question. Van Hall states that *Theobroma Pentagona* and Nicaraguan *Criollo* have both been cultivated in Nicaragua since the memory of man. It certainly would be interesting to know if the huge bean of Nicaraguan cacao could be obtained by hybridising *Criollo* with *Pentagona*. Apparently the conditions in Nicaragua would allow of this, but not, as far as I know, in Ceylon."

Writing in the pamphlet No. 407, mentioned above, Mr. Hart said:—

"At the Agricultural Show held in Port-of-Spain on 28th-29th January, 1910, the Department of Agriculture exhibited a set of cacao pods amongst which was a lot labelled *Nicaraguan Criollo*. These pods were so contrary to the form recognised as *Nicaraguan Criollo* as figured by Preuss, Wright, and several others that it would appear important to ascertain their origin, and I suggest that the department of Agriculture might be asked to afford information on the point. The pods in question had yellow skin, bottle necks, and generally showed all the points of Trinidadian *Criollo*. It is important that information should be forthcoming on the point, as the value of *Nicaraguan Criollo* is now being again discussed by eminent authorities, and nothing should be allowed to arise which would confuse the point at issue."

Commenting on this, the late Mr. J. B. Carruthers (then attached to the Agricultural Department of Trinidad after having been in Malaya) made the following remarks:—

"New strains arise in cacao with great facility, and in Trinidad, as elsewhere, the pods borne by a tree at one crop do not always agree in their external characters, size, shape, colour, etc., with the fruits of the same tree at another time. This results in much confusion and makes the task of compiling a satisfactory and permanent catalogue of cacao fruits possessing distinctive characters more than difficult. The fact that the varieties are so little constant makes them of less importance agriculturally, and for some years I have advocated that in amelioration of cacao cultivation, selection for bearing yields and not for varietal characters is the best mode of progress.

"I have no doubt that, as Mr. Hart points out, the pods he saw at the Agricultural show were not what

he recognizes as typical *Nicaraguan Criollo* and perhaps not even what he would call *Nicaraguan Criollo* at all, but as there is no accepted standard it is not possible to label pods so that all experts in this question would be satisfied."

"If there is one variety in the whole range of cacao which can be defined by its characters," said Mr. Hart in reply, "it is *Nicaraguan Criollo*," and it is to be noted that Preuss, Wright, Lock and Hart, all agree upon this point. "*Nicaraguan Cacao* (i.e., *Theobroma Pentagona*, Ed., T. L.) has a high shouldered pod either red or yellow and has seeds nearly double the size of any other variety of *Theobroma Cacao*, a fine break, flavour and colour of the most admired type."

"*Trinidad Criollo* has a bottle-necked pod, either red or yellow, with small roundish light coloured seeds, not half the size of the *Nicaraguan*."

"Lock—unfortunately, perhaps—does not appear to have seen or recorded a bottle-necked *Criollo* form and there is no figure of it among Wright's Illustrations of Ceylon-grown Cacao. In fact it has not been sent there."

"I found the *Nicaraguan Criollo* in Central America in 1886, and I again found it in Nicaragua in 1893. I collected it, with three other distinct species of Cacao not hitherto well known, and introduced it to Trinidad, whence I distributed plants to Ceylon a year later. These plants are the parents which produced the fruit of *Nicaraguan Criollo* figured by Wright on p. 28 of his work, and exactly corresponds with figures and drawings by Preuss, who shows the bean on p. 166, Fig. I, and the pod in Plate I, Fig. II, as he saw them in Nicaragua."

"Wright mentions that Preuss 'states that *Criollo* is neither native nor wild in Trinidad, but has been introduced there.' This gives an erroneous impression, as Preuss was referring to the Venezuelan *Criollo* (see page 40 of Wright's work.) He did not find the Trinidad form in his fourteen days stay here; personally I did not find it till after nearly as many years search."

"The pods exhibited by the Department of Agriculture cannot claim close affinity with *Nicaraguan*; but have all the characters of *Trinidad Criollo*."

"The statement that there is 'no accepted standard' cannot be sustained, for more than one reason, as this Cacao has recently been valued on account of its unique character at nearly double the value of *Trinidad Cacao*. It is not now grown exclusively in Nicaragua, but still appears plentifully in the neighbourhood of Rivas on the estates of Monsieur Menier and others."

"Certain minor differences in form no doubt occur, as Mr. Carruthers says, in pods upon the same tree. But it is yet to be recorded that the bottle-necked form of pod changes to a high shouldered form, or that the large bean of the *Nicaraguan* ever changes to the small one of the *Trinidad Criollo* and vice versa."

"The classifications of Hart and Morris are said by Wright to be applicable to Ceylon, on account of the fact he mentions (viz.,) 'that most of our seed supplies have been obtained from Trinidad.'—Wright p. 29). It is on this page I find the sentence adopted

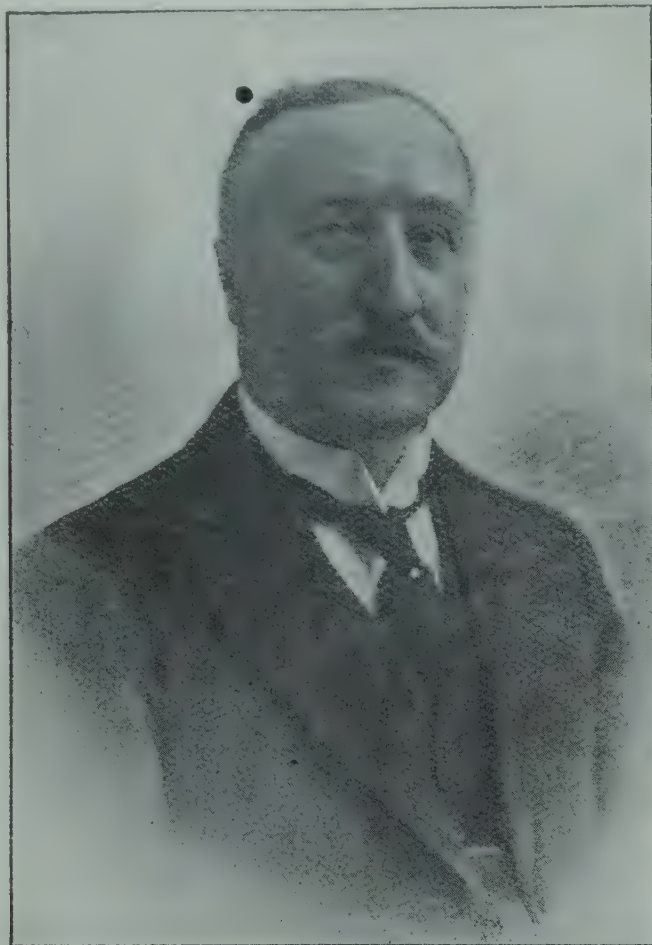
by Mr. Carruthers, in which Wright quotes Preuss, as stating that the classes of Hart and Morris 'do not strictly apply even in Trinidad itself.'"

The point therefore as to whether the Ceylon *Nicaragua Cacao* which sold at 193s. 6d. came from *T. Pentagona* or *T. Cacao* via *Criollo* stock is still in doubt. It looked to me, judging by the irregular shape of the beans, to favour *Pentagona*, but has probably become hybridised. When Mr. Ross first started planting Cacao in Ceylon, I believe he was first, or among the very first to do so; he obtained his seed in Wardian cases from Trinidad, because I can remember, although still at school, my father arranging with a well-known London builder about making the cases for sending the seeds across in.

"Tropical Life" at the Play.

If you want to have a good time go and see "The Kiss Call" at the Gaiety. It is very bright and witty without being too noisy, like the "Jazz" shows which seem to be the chief idea of some performances. With Mr. G. P. Huntley and Stanley Lupino as chiefs in command no one need be afraid of a dull moment, whilst Miss Evelyn Laye and Miss Binnie (daughter of the well-known "Bobbie") Hale, were, among others, both attractive and entertaining. This is the first time we have had the pleasure of seeing Mr. Robert Hale's daughter; her ability as an actress promises well, but the assistant who did her "make-up" appealed to us as being somewhat of an amateur. We welcome Mr. Ivan Caryll back again in our midst as being responsible for the music; pleasant souvenirs in the past were recalled as we listened to his music in "The Kiss Call."

From the little we saw of Maurice Moscovitch as Shylock in the "Merchant of Venice," we are quite sure that his impersonation of a Jew, anxious to have his own back on a Christian, and then the man's collapse when he lost in the gamble, is very real, more so than when acted by a non-Hebrew. The behaviour of the East End Jews during the air raids in London surprised everyone; stamina and grit evidently are the exception rather than the rule among them. This is how Moscovitch, a Jew, acts the Jew in the well-known play. So long as he thought he had the game in his hands Shylock, according to Moscovitch was cruel and exacting, but the moment luck went against him, he collapsed and fell in a heap on the floor. There are exceptions to all rules but the way the Jews ran away from danger whilst the raids were about, and the rough and pompous way they shoved the Gentiles about after all danger was passed, makes one feel that Moscovitch knows the true characteristics of the lower-class Jews, and portray them correctly in the person of Shylock, on the stage. We should like to have seen more but the Court Theatre is not suitable for side seats, and we took turns with the two officers to our left to have peeps at the stage as otherwise our heads got in each other's way and none of the three would have seen enough to be able to judge of the actors and their acting.



“Tropical Life” Friend.—No. 173.

MR. ROBERT BRIDGE, M.I.M.E.

Of the Firm of Messrs. David Bridge and Co., Ltd.

THERE is a dominating optimism and a persuasive but very pushful nature about Mr. Robert Bridge that makes it a real pleasure to work with him, that is if you are a worker and not a mere scooper-in of shekels. There is much in his character and methods of work that must have existed, we should imagine, in the temperament of Cecil Rhodes and if the reproduction at the top of these notes come out, as we hope, in any way worthy of the original photograph, and also of the original of that photograph, most of our readers will agree that this similarity of temperament between the two is not to be wondered at since their cast of face and features has so much in common. Certainly the restless energy, restless but orderly and under perfect control, that Cecil Rhodes had to so large a degree, is and always has been very much in evidence with “Our Friend,” as was proved by his behaviour when erecting his stand at the first (or was it the second?) Rubber Exhibition. There everything was in order, very comfortable, very attractive and indicative of a good deal of money having been spent on it, but—when Mr. Robert Bridge stood up in the middle of the finished exhibit he said it was too cramped, there was not enough room to show all the machinery and especially for half a dozen people to come in, walk round and examine them. “Our Friend” was right, it was a pleasant exhibit to look at but not to take orders from, and so it went—went with a rapidity that astonished us after a turn round the hall. The Pavilion was flat, the cozy chairs gone and a space in the annex already booked, and on it men were fixing up the dismantled pavilion.

The great expansion in their business has been alongside of and in collaboration with the great expansion in the productive and commercial industries of the tropics and our Overseas Dominions. There, the same as over here in the cotton and manufactured rubber and vegetable oil factories, the planters and those who had come out to advise them said we must have machinery to help us. Old-time methods must go. We are not sure yet what we want, but machines we must have and who will help us to elaborate the right class of machine?

The firm of David Bridge and Co., with “Our Friend” at its head, was among the first to step into the breach. In many ways Mr. Robert Bridge was the very first to come forward and still remains so, as with the question of drying produce. We have worked with many engineers on this section of tropical estate work and, pushing and painstaking as they all have been and still are, no one has been so anxious to do all he could and a little more beyond, as Mr. Robert Bridge, and that is where it has been so pleasant to work with him.

His booklets on tropical industries, as sisal, copra drying, etc., his souvenirs in all languages for the many exhibitions at which his firm has exhibited, souvenirs in the shape of bright-covered, beautifully printed books on machinery, one long train of illustrations with descriptions of each machine, have always been a feature of the firm. Visitors were glad to have them. There was the machine to look at, there were its details in their own language. No wonder the firm of Bridge grew, and no wonder that exhibition stall was too cramped, and half had to go elsewhere, a sudden outburst of growth typical right through of the firm itself, since it caught the disease from the tropics, where things grow so quickly and yet last so long when well looked after.

“I have been more or less connected with engineering all my life,” Mr. Robert Bridge told us one day, when discussing the future of English machines for tropical use, “and my experience is that engineering is a very hard but a very interesting life. Furthermore, whilst it was as hard or even harder in the past than it is today, it has not had its reward, its *quid pro quo*, that is only now coming to it, firstly in the form of appreciation by the world at large, scientific and practical, and that to the enthusiastic maker of machinery is the best reward of all. Then buyers begin to show more confidence in you; they realise that you are working for their good, to help them, and not merely to fill your pockets by emptying theirs. With such a change in the planters’ ideas of reliable engineering firms, I look to the future with unalloyed optimism. We have, of course, gone through a very strenuous and anxious time; the upheaval has been terrific, why be surprised therefore if we do not settle down at once. Does the sea do so after a big storm, and what are we but a sea of people and perplexities? But we will settle; let the winter go by, it will give us all time to simmer down and then will come our reward, the time of our lives but not without hard work, but we will willingly put up with plenty of that. I am sure that we have a glorious time in front of us. We deserve such a time and if we do not get it, it will be our own fault.”

Business Notices.

1.—The address of TROPICAL LIFE is MESSRS. BALE, SONS AND DANIELSSON, Ltd., 88-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

NOVEMBER, 1919.

The Brazilian Meat Trade.

Here we discuss the eradication of Ticks (*carapata*) and the importance of salt-licks. In a future number, when the notes come in from Brazil, we shall discuss the need of improving the pasturage by the use of manure, by drainage, or irrigation, all tending to increase the weight of the animals and improve the quality of their meat.

SEEING the following statement in *Wileman's Brazilian Review* we looked up the notes that were compiled when writing Chapter XX. of *The Rubber Industry of the Amazon*, and now have pleasure in laying before cattle-breeders in Brazil and elsewhere in the tropics, our views on the subject. Ticks, of course, are known in many places as *Carapata*.

Wileman's pointed out that:—

"Brazilian meat in London was never popular and of the 169,136 tons exported to that destination during the four years 1915-1918, only 14.4 per cent. was marketed in England and the rest on the Continent, largely in Italy.

"So long as the war lasted and the sinking of meat ships was a daily occurrence, consumers had to put up with what they could get, but now it is all over, buyers are beginning to pick and choose, and if reports

of the meeting of butchers at Smithfield are correct, some are drawing the line at Brazilian, Manchurian and South African meats.

"The protest of 3,000 members of the retail trade is a serious matter for the Brazilian industry, and though it probably may not stop exports to France or Italy, it is none the less to be regretted because it will narrow the market for the Brazilian commodity and give Brazilian meats a bad name in Europe.

"World-wide industries may be improvised at a pinch, but unless they are built up on solid foundations they will not last. The world wants meat, but not so badly as to put up with anything that is offered, and if Brazilian producers are wise they will overhaul their methods and begin again at the very beginning by improving their pastures and destroying the insect life that makes living intolerable to high bred stock and keeps cattle poor and emaciated. That seems to us the preliminary of any great improvement in the herds, though it would be well were more attention given to the transport and treatment of the meat between the slaughterhouse and the port of shipment."

We have written out to a leading authority on pasturage improvement in Brazil for some up-to-date information on that important side of the question, and meanwhile, speaking of Brazilian meat in London, it will be noted in the above that of some 170,000 tons of meat imported into London from Brazil, only 14.4 per cent. was marketed in England, the remainder being sent to the Continent, to Italy for the most part. During the war, when the sinking of meat ships was a frequent occurrence, consumers had to put up with what they could get, but now that conditions have altered, they are beginning to pick and choose, and are discriminating against Brazilian meat.

Prior to the war, the export trade in frozen meat from Brazil was non-existent. The first essay in this direction was made in November, 1914, but since then the new trade has gone ahead by leaps and bounds. The following figures speak for themselves:

Shipments of Frozen and Chilled Beef from Brazil.

Year	Tons exported
1914	1
1915	8,514
1916	33,661
1917 (Jan.-Mar.)	17,693

At a conference of Brazilian stockowners and breeders held in Rio Janeiro, in May, 1917, the prevailing opinion was held that this new trade which sprang up with the war, had come to stay, and that Brazil was destined to become one of the largest beef-exporting countries in the world.

With the striking natural advantages which Brazil possesses as a cattle-raising country there is every possibility of these sanguine expectations being fulfilled, but, as far as the English market is concerned, this will only be provided that the necessary steps are taken to bring about a very considerable improvement in the quality of the exported beef. Brazilian stockowners and breeders will have to learn what has been accomplished in the Southern States of the U.S.A., in connection with tick eradication, and must apply these precepts to their own cattle-raising practice.

With the object of bringing about the necessary improvement in the quality of meat for exportation, the primary steps to be taken are:—

1. Eradication of the Cattle-tick.
2. Grading up of native stock by crossing with fine-bred imported bulls.
3. Fully adequate salt-licks. Both the Imperial Government and the Inter-State Exchequers should do away with all import duties on salt for use on cattle ranges.

Apart from the problem of obtaining an article of saleable quality, the avoidable loss in various directions, especially the weight of the animal and the quality of its meat, as a direct result of tick-infestation, is sufficiently great to call forth the consideration of the cattle owner. To give some idea of the extent of these avoidable losses, the following notes will serve.

Less than ten years ago the conditions for cattle-raising in most of the Southern States of the U.S.A. were very similar to those which at present exist in Brazil. In these states, from 1909 onwards, an extensive campaign was undertaken with the object of eradicating the cattle-tick. This campaign took the form of the systematic dipping of all stock, and of quarantine regulations to prevent the transport of infested stock to or through clean areas. As a result, most of these states are practically free from ticks, and with the ticks disease largely disappears, and an all-round improvement in condition and general yield has been established.

In illustration of the benefits directly attributable to tick eradication measures, one cannot do better than to cite briefly some of the official statistics published by the U.S. Dept. of Agriculture, Bureau of Animal Industry.

In the period prior to tick eradication measures (1900-1909) the annual loss due to tick-transmitted disease (Texas fever) ranged from 2 per cent. to 65 per cent. in different states, the average loss in all states being 15.3 per cent. Since the inauguration of the campaign against ticks (1909-1913) the average annual loss has been reduced to 1.3. Prior to tick eradication the average price obtained for a three-year-old steer was \$16.15; as a result of the eradication measures the price has risen to an average of 25.28, an average increase in value of 57 per cent. for each steer. Tick-free stock show an average increase in weight over infested stock of 22 per cent. on an average, representing a gain of approximately 116 lb. (of meat) per head. In the period 1900-1909 the average price per pound for meat from southern stock was \$0.02 $\frac{1}{4}$; by 1911 the average price per pound had risen to \$0.3 $\frac{1}{2}$, an average increase of 56 per cent in value. In this respect, some allowance should be made for appreciation in value apart from the effect of tick eradication, and on this account the official estimate reduces the foregoing figure to 40 per cent.

Tick infestation is a cause of serious diminution of milk yields in dairy stock, and the following statistics, taken from a report on an official investigation carried out by the U.S. Dept. of Agriculture, Bureau of Animal Industry, in co-operation with the Anthony Farms Co., Anthony, Fla., will illustrate this point. Taking the milk-yield of tick-free stock as 100, that of *lightly-infested cows* was 81.4, and of *heavily-infested cows*, 57.6.

The export trade in hides from Brazil is a business of no mean importance, and the tick question enters here as the following figures will show. In the U.S.A., hides from tick-infested cattle are graded as No. 4 quality. The same hides if free from tick-marks would grade No. 2. The difference in price between the two grades is 3 cents a pound, and as the hide of a southern steer weighs 42 pounds, more or less, the presence of tick occasions a loss of \$1.26 per hide.

There is ample evidence that the importance of these matters has been realised by the Brazilian Government, and already a campaign is being instigated; but unless the Government has the full co-operation of the stockowner and breeder, the result will be disappointing. It is doubtful whether the problem will be satisfactorily dealt with unless compulsory dipping and quarantine measures are enforced throughout the stock-raising provinces of Brazil.

Once rid of the ticks, keep the animals, horses as well as cattle, in good health, so as to encourage them to keep the pests at a distance. To do this the animals everywhere must have access to salt-licks. The duty on salt of any kind is too high to encourage breeders to let the animals have enough salt. Many, perhaps the majority of them, seem to have no organized arrangements for the animals to have access to salt and, until all this is changed, Brazil cannot expect to occupy that position in the meat markets of the world that she could enjoy were her rulers wise enough to allow rock-salt, guaranteed for animal use only, to move about the Republic free of taxation and the horse and cattle owner alive to the importance of giving their animals adequate supplies. The matter merits the attention of the new President and the experienced advisers that he has gathered around him. The Salt Union and similar bodies over here should also take up the matter, for we can augment Brazil's own output of salt with advantage.

Economic Zoology.

Our Motto: "Utilization, not Extermination."

THE PLUMAGE TRADE. THE EXTREMISTS DIG UP THE HATCHET. WHEN WILL REASON AND ORGANIZED PROTECTION BE ALLOWED TO PREVAIL?

It is reported that an appeal has been addressed to the Prime Minister and to the President of the Board of Trade to re-introduce a Bill to prevent the cruel destruction of many birds by prohibiting the importation of bird skins and feathers.

Those who, like ourselves, know the ins and outs of the tropical bird trade, and have always striven to place it (like the fur trade should be) on a basis that would equalize and assure supplies from fresh sources as the older ones, like the everglades in Florida, get opened up, drained and developed, causing the birds to betake themselves elsewhere, can only regret to see the language used and mis-statements introduced into the wordings of these appeals. The world is not so black as the extremists would have it painted, and were the trade as a whole but 25 per cent. as cruel as these scaremongers would have us believe, it would have died a natural death years ago.

Taken as a whole it is not a cruel trade, and never has been, at least so far as India and the tropics are concerned. Even with the brutal assaults that the egrets make on each other, and which has been graphically described, we would much rather be a bird in India or elsewhere in the tropics than the children of the lower and lowest classes either there or over here. Yet we are urged to increase population, no matter how the babies and young children suffer, whilst we must not kill birds for the purposes of trade. It is a strange creed. We never have believed in it, and never shall.*

In TROPICAL LIFE, October 1912, p. 189, we warned our readers how the wild life of the herons reduces their numbers, so that when heron or egret farms are established care must be taken to avoid any fighting for nests, for food, for mating, &c. We describe a wild herony, and quote the authority who tells us of it: "Most of the young birds had no feathers, and all seemed possessed with but one idea, and that was either to limb a small brother or swallow him whole, and all kept up either a shriek of fear or pain or a yell of rage.† Floating on the top of the putrid water were masses of dead birds, some with legs torn off, others without heads or wings. Most of them were dead; but others were dragging their maimed carcasses about in a ghastly manner, &c."

What a tale we should hear in London were one of the anti-plumage brigade to see such an exhibition of the brutality of wild bird life that everyone knows of and deplores! It must have been an outburst of ill-feeling like this (the details are prolonged, for we give but few lines) which has given rise to the wonderful photographs and fantastic tales that one hears. Except perhaps in the cases alleged against the United States, which we cannot prove to be untrue, we are quite certain that no real cruelty exists in connection with the trade, as a whole, in India and the tropics, nor is there danger of extermination *unless* the birds are allowed to fight it out.

Knowing all this we addressed the following letter to the London *Observer*, which that paper was good enough to publish on July 20th, along with two others on the same subject. Can anyone object to the proposals that are now made any more than to those outlined in the Preface of our book referred to in the footnote a little way back?—

To the Editor of the "Observer."

SIR,—Thanks are due to you for giving publicity to the revival of the ever-present volcanic controversy connected with the right and the wrong of the killing of birds for any of the following reasons:—

(1) For pleasure, and the excitement of taking life as sport.

(2) To protect crops.

(3) To supply the demand of those who can utilize the feathers for fishing-tackle making, millinery, &c.

(4) For scientists, museums, and household ornaments.

It is an old trouble that could be threshed out in

a few hours, were the extremists tabooed. Up to the present those who object to the killing of the birds from purely sentimental reasons have never found themselves able to face those who, through the London Chamber of Commerce and other channels, have offered to meet them and show how and why the traffic in the feathers under heading No. 3 should be continued, especially from the tropics.

As it seems likely that fresh life will be infused into the controversy, may I (with twenty years' personal knowledge of the trade connected with the importation of feathers and bird skins into this country up to 1904, and another twenty years of notes on the subject before that which I obtained from my father's experiences) point out the following facts for the consideration of those willing to judge the matter impartially:—

(1) There need be, and there should be, no cruelty in supplying bird skins and feathers for the fishing-tackle and millinery trade. Collectors known to be cruel or wasteful of bird life can be prohibited from carrying on the work, whether in the tropics or elsewhere.

(2) That, far from causing a scarcity of the birds, the demand thus encouraged will, with proper organization, largely increase the numbers of birds (and also of fur animals) now tending to become extinct through no one being interested in their preservation.

(3) Farms could be established for many kinds of birds, and sanctuaries or breeding centres for other. In 1912 I went over to Paris to discuss the establishment of egret and pheasant farms, especially with a view of producing more perfect specimens and evolving new colourings and varieties by cross-breeding. Such a plan is quite feasible and would be extremely suitable for ex-Army men, wounded or otherwise, and their families.

For the above and many other reasons, those who wish to develop the resources of this Empire, and who do not want to see a remunerative trade go to France, and especially to Germany, which latter country will grab at it, should make themselves master of both sides of this controversy. It is well worthy of the little trouble that it would take to do so. Up to now the public has never heard the traders' side, and it never will do so, unless it insists on having both views placed before its notice fairly and without prejudice.—Yours truly,

H. HAMEL SMITH,
Editor, TROPICAL LIFE.

London: 112, Fenchurch Street, E.C.3.

July 14th, 1919.

So far as our memory carries us back, we have all the leading authorities on bird life in the tropics with us. They know the dangers that the opening up of the world that has progressed so rapidly of late means to wild bird life. Plantations, parrots, monkeys, and other pests cannot and do not live together. Either the plantations or the pests must go. It only remains, therefore, to interest the world in the birds as they are interested in rubber and cacao trees, otherwise all will run "to bush," and be cut down and burnt out as civilization strides across the tropics. At present wild life has no protector against

* See "Egrets and Birdskins—the truth about their Collection." Price 5s. Bale's Ltd., 83-91, Great Titchfield St., W1.

† See Berkley's "Bulgaria before the War," as quoted in Seeborn's "British Birds," vol. ii, p. 499.

the pioneer and his civilian army. Prohibition of transport will not prevent destruction; it only kills interest in the birds by preventing their being utilized when dead. This is where reform is needed, and where the extremists are the chief enemies the birds are "up" against.

AN excellent special plantation number was published by the *India Rubber Journal* on November 15th, which will be welcomed by all planting men, rubber and otherwise, as it contains up-to-date news on important items that concern everyone. Among the items discussed are the amalgamation of the larger firms and the tendency to pool buying interests; the latest machinery on the market or being evolved; the question of uniformity, of increased shipping and its beneficial effects—when forthcoming—on tropical crops and the question of exchange, &c. Then there are notes on Sunday tapping, on diseases, on the increased foreign interest being taken in rubber planting in Dutch territory if not in our own. Among the signed articles we notice, "Hevea and Plant Breeding," by Sir Daniel Morris; "Variation in *Hevea Brasiliensis*," ex the *Annals of Botany*, by Stafford Whitby; "Rubber Cultivation in Indo-China"; "Adverse Eastern Exchange: its Cause and Effect: Will it Ultimately affect Plantation Rubber?" by the Editor of TROPICAL LIFE. Many readers over here have expressed pleasure at seeing the last-named article.

Trade, Politics, and Finance.

In spite of the buoying up and the assistance given by the feverish buying of German marks by the man in the street with the idea of doubling and trebling the amount invested without further trouble, as many as 150 marks went to the pound sterling on November 5th, and in all probability, we take it, further impossible records must be looked for since Germany has yet to settle down to satisfy her needs in raw materials and food, &c., from outside countries, and above all to pay her war debts. If before she has started to do so, a record of 150 mark to the £ had to be registered, which brings the mark very near to three halfpence, one cannot help wondering how much lower the value can fall. Perhaps it will prove fortunate that we have no smaller coin than one farthing for it to go to.

Whatever the end, we do hope that those who are supposed to be licking Germany into shape will be able to prove that they can do so far more conclusively in the near future than they have ever done in the past, and so help to remove the idea that all the talk of what will be done is not still mere bluster and "gas." The Kaiser, the Crown Prince and other criminals are still at large, happy and comfortable and probably smiling at the deluded peoples of the Allies, who were silly enough to imagine that they ever would be tried for any of the crimes that they have committed. Lose confidence in your rulers on one point, such as the non-trial of the Kaiser, and you are bound to lose it on many. It may be unwise to bring these men to trial, but if so, why ever pre-

tend that you were going to do so. If you talk big, then "act big," or you cannot but look very small when you have to climb down. This is why there is that complete absence of confidence in those who are supposed to be bringing Germany to heel. This is why the only impression imprinted on our minds leads us to imagine that all that has been done is to let von der Goltz laugh at us from Russia, Hungary talk of electing a monarch and the German aristocrats to run loose in and out of Germany.

Whilst we may lack full confidence in our rulers, individually it would seem that the Britisher has not lost confidence in himself, but is more determined than ever to see things through. It is not the work of the general public to rule the country and so if there is no settled policy—most people say we have no policy in any section of the Government at all—the merchant, the shipowner, financiers and others must have patience and whilst consolidating their own affairs and business wait for a clear lead to come from above; may it soon appear. Until it does show its first glint, however, do let us stop "talking big" and "doing little" over Germany as has been the case up to now. If we cannot manage the Prussian Hun let us, at least, keep quiet until we learn how to do so. If Berlin and other cities were raided and held to ransom, one wonders how many hours would pass before Von der Goltz and his hordes would be out of Russia. Wolves and husky dogs are not licked into shape by neglect and pampering.

That we have great confidence in ourselves is proved by the fact that in one day, Sunday, November 2nd, our financial and merchant leaders asked the country to subscribe £14,000,000 to various commercial undertakings. Probably they got all the money wanted and more. In this list the firm of Lever, of which further particulars are given elsewhere, asked for £4,000,000 to help them make sure that the English soap trade will be secure to this country and its own people. If other industries, the metal and electrical concerns especially, could only be persuaded to do the same, there would be far less exploitation of the British public by German Jews and others, which Mr. Hughes out in Australia has exposed as fearlessly realizing how these outsiders can and do drain this country of far too much of its wealth.

Writing on the matter of amalgamations, which have become as necessary in commerce as in war, the Trade Supplement of the *Times* for November 1st reminds us that such combinations must be on both sides if producers and sellers of our tropical produce as well as manufacturers and buyers are to hold their own. Combinations and understandings between manufacturers and wholesalers over here when it comes to selling has indeed reached a fine art, as the average man and woman find when they go to buy woollen and cotton clothing, boots, &c. All prime necessities seem to be able to soar to any height whilst an odd shilling on a pound of choice chocolate or two or three pence on a meal move the authorities to great wrath.

"The Federated Farmers' Association of South Africa," the Trade Supplement tells us, "has entered the business field as a buyers' combination." Cacao, sugar, tea and other planters could quite as well form associations and do the same. What about the Agri-

cultural Association of Ecuador for instance? All such bodies will, like the South African Association, have to prove themselves capable of taking the place of the merchants and agents; yet the question will have to be faced sooner or later, for evidence continues to accumulate that there is a tendency for buyers to meet combination (i.e. of sellers in the U. K. and elsewhere) by combination (i.e. of buyers of goods from the U. K. and elsewhere).

So far so good, but as careful readers of *Tropical Life* will know, the above—which deals with manufactured goods from Europe and America—does not interest us so much as the need for combinations, well-organized and wide-spread, among sellers of raw materials and produce generally, to be formed in the tropics and elsewhere to meet the combination of buyers in the temperate zones or their net-work of representatives in the tropics themselves. It is on this point that careful attention should be given and given without loss of time, for with a single soap firm with an authorized capital of £100,000,000 and a C. F. R. chocolate combination which could also be valued at millions if put on the market, to say nothing of our cotton and wollen buying concerns, it is high time that producers on a big scale both within and without the tropics started to put their houses also in order. Whilst maintaining their individualism—an important asset in estate management and tropical development—a combination of producers should be arranged so that when buyers approached they could be handled firmly and without fear of losing a sale; such buyers, on their side, also would be enabled to secure those huge parcels of raw materials, month by month, that the modern manufacturing combines must have.

And that is enough for the marketing of the crops, let us now discuss the markets. Sugar continues, and will continue to realize very high prices for manufacturing purposes, what it will go to for domestic use remains to be seen. The public, meanwhile, are now in no doubt that sugar will become increasingly scarce and dearer in proportion; recent advances of 7s. to 8s. have driven home the latest instalment of such a lesson rather forcibly. The only question now to be answered is when these lessons—punctuated by the rises—will be continued. A recent set of records includes White Mauritius at 102s. to 109s., in what is known as the “free” market, whilst West Indian Crystallized has been going at 84s. to 94s. Later on, 115s. was touched for White Mauritius and 114s. for White Java, whilst W.I. crystallized went to 98s. Speaking of the position generally, the *London Public Ledger* of November 8th told its readers that “there is nothing as yet known regarding intentions of the American Equilization Board, in conjunction with our Royal Commission as to securing part of the new Cuban crop, but meantime sales of these sugars continue to be made at advancing prices. There are buyers at \$8 25c for December and at \$8 25c for January delivery all f.o.b. Cuba. These latter prices at the exchange of \$4 18c are equivalent of 42s. 10d. to 44s. 2d. per cwt. f.o.b. When it is considered that the pre-war value of these sugars was barely 10s. per cwt. f.o.b., that last season’s crop of 4,000,000 tons was entirely disposed of at the equivalent of 25s. 10½d.

f.o.b., and that the crop now about to commence, and estimated to yield 4,500,000 tons, is being realized at such prices as 42s. to 44s. f.o.b., some idea can be formed of the prosperity of the Island of Cuba.”

With coffee, the “future” market seems more inclined than the spot market to remain firm. At the same time present prices continue to be very good. Fair bold greenish East India went up to 153s. 6d., Blue Mountain Jamaica from 145s. for middling up to 175s. 6d. for fine and 179s. for peaberry. Fair boldish Nairobi touched 139s. 6d. Prices for tea tend higher except Javas which rather went in favour of buyers. Unfavourable crop reports have sent up the price of cotton until 25d. was registered for “fully middling,” the price “forward” easing down to 20·65d for next September. New Zealand hemp sold up to £46 10s., Mauritius to £63 and Egyptian sisal at £43 to £55 10s. Shellac went higher at 465s. to 472s. 6d. for T. N. Orange and 380s. for A. C. Garnet. Rubber has been firm but is still unfairly low compared with its importance as a raw material, No. 1 Crêpe last sold at 2s. 5¼d. to 2s. 6d. and smoked ribbed sheets at much the same rate against 2s. 6¼d. for Hard Fine, 2s. 4½ for ‘soft’ and 1s. 5¾d. for Caucho Ball.

Critics of present prices who do not favour a rise, speak of the big outputs that can be looked for this year and during those to come. This crop of plantation rubber is to show a 70 per cent. or 80 per cent. rise over 1918, and in 1920 a further 20 per cent. rise on this year’s output is to come and so we are to expect at least 90 per cent. over the 1918 output if not double the quantity, whilst for 1921 we shall be receiving a 150 per cent. increase over 1918. Those who know what the estate-owners have in their minds to put out, for the trees can do it if the owners and the labour available will give them a chance, can best judge what the above figures are worth, but it seems from all one hears concerning the demand for motor cars here, in America and everywhere else, if the people can pay for them, that we shall need every pound of rubber we can get. The query to our minds is, shall we get all the plantation rubber we need in face of the many new demands that have sprung up for the article during the period of the war on the top of the increased popularity of motors both for passengers and goods? In July last, motor experts, speaking of the Show, which we deal with in our first page, want to claim that the American industry was a million and a half behind her demand for cars, and will be two million behind by the end of the year. Here, therefore, are some eight million tyres required for the U.S.A. alone besides those millions to go with cars that will be or have been delivered, and that is only America. Over here, the King when visiting the Motor Show, on November 14th, is reported to have said on learning of the big output, “Every man will have a motor-car if you proceed at that rate.” All this must bring comfort to the heart of the rubber producer and, after all, it is only what has already taken place in America where, we are told, there is one motor-car to every three families in the country. Many of the highly-paid workmen can afford a run-about. No wonder America simply “eats” rubber compared with us.

Among other produce markets copra is firm and also higher, F.M.S. (fair merchantable sundried) is at £59, Ceylon £59 10s. and Malabar £60 10s. Marseilles is quoting £61 for fair merchantable. Ceylon coconut oil, however, is a shade below £100 against £101 for Cochin and £91 for linseed. By November 15th, copra had moved again to 61s. for Ceylon, 62s. for Malabar and other grades in proportion. Balata is worth 4s. 5d. for West India sheet, 3s. 2d. to 3s. 3d. for Venezuelan block, and 2s. 8d. for Panama block. Copper is around £100 and tin £278.

The advance in the Bank rate to 6 per cent. caused an upheaval which has yet to settle. On November 8th, the price of silver stood at 66 $\frac{3}{4}$ d.; after touching 67d. On November 15th the following were the principal points in the Bank return on that date compared with a year ago:—

	1919	1918
Bank Bullion ...	£87,986,441	£74,585,063
Reserve of Notes ...	18,819,580	27,391,355
Private Securities ...	79,616,755	99,760,727
Notes in Circulation ...	85,902,850	64,936,720
Rate of Discount ...	6 per cent.	5 per cent.
Price of 2 $\frac{1}{2}$ % Consols...	51	59 $\frac{1}{4}$
Price of Bar Silver ...	68d.	48 $\frac{3}{4}$ d.

The London Cocoa Market.

BY THE EDITOR.

EUROPE and America are both realizing that supplies of sugar for trade manufacturing purposes are bound to continue uncomfortably short, with a tendency for the shortage to increase as it continues. Since this is so, chocolate and confectionery makers in particular are wondering how and when so trying a period will come to an end, and what will happen before they see that end left behind and the turn of the road to unlimited supplies once more in sight. France is of course almost *non est* as a producer compared to pre-war days, India is 33 $\frac{1}{3}$ short and so must be out fighting for increased imports instead of supplying herself. The West Indies have done very well, but then there is Germany—Germany who, it seems, must be given all she wants, no matter who goes short, and if she is an importer the Allies must go shorter still.

This may not have affected the cocoa market as yet, but none can say what the result will be later on. There is no need to grow anxious, "get the wind up over the matter," is I believe the more correct modern English, but it will be wise to watch the sugar markets of the world and especially the producing and chief clearance-centres for this most important food, in the various countries. I have said so before, and will say so again. Keep your eyes open, and do not allow yourselves to be caught napping.

Coming to cocoa movements, I notice that the stock at Havre has gone down with a "plop;" how can it do otherwise when 128,500 bags were delivered including 14,658 Bahia, 38,707 Accras and 41,408 Guayaquils, against 22,670 received? Here are the figures:—

Havre Stock, October 31st—

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Pará ...	16,869	210 to 216	815	148 to 152
Bahia ...	24,783	205 ,, 220	1,737	136 ,, 146
Venezuela ...	17,841	230 ,, 300	3,487	145 ,, 175
Trinidad ...	28,784	225 ,, 235	3,119	146 ,, 152
Grenada and O.W.I.	4,351	205 ,, 230	13	142 ,, 149
San Thomé ...	39,799	215 ,, 220	—	140 ,, 145
San Domingo ...	4,307	195 ,, 205	387	134 ,, 140
Haiti ...	16,184	168 ,, 205	807	128 ,, 140
Accras, &c. ...	71,240	185 ,, 193	1,104	128 ,, 135
Guayaquils ...	53,091	224 ,, 233	2,924	145 ,, 155
Others ...	3,370	—	457	—
Totals ...	280,619 bags		14,850 bags	

The adverse rulings of exchanges generally against France is also making itself felt. As Mons. Alleaume reminds us, when France came to London to buy, she had to give (at the end of October) 37 francs to 38 francs for the pound sterling, and if she goes to the West Indies (where, although English money is currency, all calculations are worked out on a dollar basis) she has to give 8 or 9 francs for a dollar's worth of produce. This and the approaching menace of an irksome sugar market is having a quieting effect even on the optimistic French character.

The fall in the French stock is all the more noticeable since our own in London seems unable to pull up. On November 1st we had dropped to 119,513 bags (during that week alone 9,400 bags had been delivered against only 1,700 received) and on November 15 it ran as under:—

London Stock, November 15th—	1919 Bags	1918 Bags	1917 Bags	1916 Bags
Trinidads ...	—	17,277	21,866	19,999
Grenadas ...	—	7,678	21,509	12,254
Other W.I. ...	—	1,929	10,140	23,318
British African ...	—	34,458	60,248	31,032
Portuguese African ...	—	39,489	11,027	19,869
Cameroons ...	—	1,359	8,908	6,717
Ceylon and Java ...	—	9,787	34,637	26,046
Guayaquils ...	—	16,640	56,063	40,160
Bahia and Brazil ...	—	2,982	4,989	14,930
Other foreign ...	—	7,420	7,957	9,836
Totals ...	—	139,019	237,344	204,161

The Board of Trade figures for October show another drop in the U. K. stock which, on October 31st, stood at just under 60,000 tons as under, against 69,000 at the end of September and 73,500 tons on August 31st. If you multiply 60,000 by 15 bags that gives a total 900,000 bags, so we have dropped below the line of a million. On August 8th, therefore, London and Havre, between them, showed a combined reduction in stock of 206,000 bags in a month. If this continues, it will completely change the position of supply and demand and must, as it is, considerably strengthen the markets throughout the world. Here are the figures:—

Raw Cocoa Movements in the U.K.—

	Landed. Tons.	Del'd H.C. Tons.	Export. Tons.	Stock, Oct. 31st Tons.
Jan.-Oct., 1917—	55,334	39,725	4,753	53,650
" 1918—	25,913	51,319	583	17,450
" 1919—	107,240	52,621	18,734	59,750

Incr. 81,327 Incr. 1,302 Incr. 18,151 Incr. 42,300

During October, 5,606 tons were landed and 14,309 delivered, 7,556 for home use and 6,753 for export.

Can anyone tell me what has happened to the Department of Agriculture at São Thomé. I have written to the Director three times; twice no reply came and now my last letter has been returned unopened and marked (in Portuguese) "Unclaimed"? Is there no longer any Department of Agriculture out there? As I knew the Director was in Lisbon at the time the last letter, now returned, was addressed to the Director of Agriculture or Deputy; surely that should have "fetched" some one, but it did not, it only "fetched" the letter home. What became of the other two I do not know.

The Lisbon figures have been coming in late and irregularly. I notice that none were given in either of my two last reports. Here they are for October, which give, at the same time, the stock on September 30th:—

Lisbon Movements, to October 31st—				Bags.
Stock on September 30th	...	...	...	198,531
Landed in October	...	...	...	4,876
Makes				203,407
Less delivered in October	...	...	...	24,596
Leaves stock on October 31st, 1919				178,811
Against	..	..	1918 ..	107,811

Coming to the productive side, the figures for the full crop-year, have just come to hand from Trinidad, here they are—

Trinidad Exports—Crop year—October 1—September 30				
	To England	To France	To U.S.A.	Total
	Bags	Bags	Bags	Bags
1918-19	64,775	145,395	119,217	329,387
1917-18	43,967	13,600	213,016	270,583
1916-17	28,917	117,649	208,786	355,352
1915-16	53,230	68,694	175,186	297,110

The Bahia movements for the first five months of their present crop-year, compare thus (I add the year 1915 as it has proved to be the record so far for exports):—

Bahia Movements—		Receipts at Bahia	Exports 1919	Exports 1919	Exports 1915
		Bags	Bags	Bags	Bags
May	...	6,227	107,540	90,729	30,598
June	...	22,721	23,198	14,025	51,038
July	...	41,285	41,533	50,700	72,884
August	...	74,691	47,707	43,905	83,114
September	...	112,078	94,829	22,117	90,780
Total	...	257,002	314,807	221,476	328,414

If the cocoa "world" is as much alive at producing centres, as it undoubtedly is over here, things generally must have been very busy. What exact size the volume of business done over here has assumed no one can say, but it must have been very large, so much so that there are those who are beginning to wonder what proportion of our 700,000-bag mystery stock is in manufacturers or other "second" hands waiting there until wanted.

If this view has any truth in it, some one must have most optimistic views as to the future or rather does it betoken great caution on the part of those who are laying in a stock against the day when Germany, with no longer any need of playing "hard-up," starts to buy cocoa right and left as she could do now if her war profiteers wanted to?

Diversity of opinion as to what the future, especially

the coming twelve months, holds in its lap for us all, is shown in several remarkable differences that seem to exist in the prices quoted and paid. One of the big dealers told me the other day that he had just been offered São Thomé at 122s. f.o.b. whilst he had in his hand a wire accepting his lower bid of more than—let me say 15s. less. Of Bahias very little news is allowed to leak out. The last quotation I heard mentioned—it was the same day that the São Thomé deal was pulled off—was 126s. c.i.f. equal to 141s. if you add 15s. for your charges or 138s. if you consider 12s. will cover costs. Very little seems to have been done in Bahias over here. The United States had the bulk of September's exports, say 90,000 out of 112,000 bags shipped.

We have learned much from Germany during the past five years as regards what not to do if the world is to be carried on as a civilized community. With regard to the manufacture of cocoa as a food rather than a sweetmeat, there is also much that we can learn, and those centres which produce the raw material would be well advised to master all that our chief opponents have to tell us on how to extract the maximum of nourishment from cocoa and chocolate. Those who do so, and those who will help to make the propaganda world-wide, would greatly increase the world-demand for raw cocoa, which is what all readers of this journal want. Lack of room forces me to give only one or two extracts but the whole article was published by the *Confectionery Journal*, as its opening article on October 16th, when I read, quoting the German ideal: "A real war chocolate should be a man's chocolate—a strong concentrated nourishment which could not creat a thirst." Here is the recipe for a real, full-value, war chocolate; a nourishing, refreshing, strong chocolate for men, with a large proportion of cocoa, much fat and little sugar:—50 kilo. cocoa from well roasted cocoa beans, 10 kilo. cocoa butter, 40 kilo. sugar. This chocolate, with a maximum sugar content of 40 per cent., an estimated fat content (free from fat) of from 23 to 25 per cent., has, it is considered, the highest claim to rank as a first-class soldier's chocolate."

Then comes a statement that troubles me to believe, for how can a decent chocolate be produced at 56s. a cwt., even when the raw article only costs that price instead of double such a figure as now? "When we look round the retail trade," said the *Gordian* which published the article, "and see household chocolate delivered at 56 marks per cwt., and a half-pound for 28 pfg. (at that time 3d.) we can but express the hope that a full-value chocolate can be produced at a reasonable price." Reasonable must be a somewhat ambiguous term in German, if it means that a good useful chocolate could be produced for 6d. a pound (of course free of any duty). I have often asked for such chocolate at 2s. a pound including duty, but then I felt I had been daring. The whole article, it is a long one, wants careful consideration, for after all it contains the kernel of a most important future for the raw cocoa industry and one that could and should be established at once, viz., the permanent placing of good nourishing chocolate on sale on a scale similar and in proportion to meat, bread, fish and vegetables. The sooner the public is trained to realize that cocoa can be placed on such a parity they will gain both in

health and pocket and the planters will gain too—in pocket.

The *Confectionery Journal* is also a steady supporter of the choice chocolate creed, and the preservation of *criollo* cocoa from extinction. In a letter on the subject in a recent issue, the writer complimented the *C. J.* on its stand for fine chocolate and then said: "The fact is that manufacturers do not want to be bothered with fine chocolates. It needs too much skilled supervision and cannot be made fast enough to suit their craze for output." Probably there is much truth in these statements, especially with regard to the trouble to supervise the making of the chocolate, but that is not so troublesome as the purchasing of adequate supplies of fine superior *criollo* grades would be if fine and choice chocolate made mainly or solely from such grades were on sale in the chief capitals of the world. Why should it not be? The land is there to produce the beans, the public exists to pay any price for what it wants provided it gets value for the money and, as the cocoa correspondent of the *C. J.* said in their issue of November 13th, "this demand, in the past, was satisfied by the Continental houses, the chocolate being purchased in Paris, Brussels, or elsewhere. Why should not such a trade therefore run through the retail shops in England?"

Meanwhile those who would like to see more Ceylons in London, must still view their latest export figures with disappointment over the heavy shipments to America and the Philippines compared with those to London say:

Ceylon Exports—January 1—October 6

		1918 cwt.		1918 cwt.
To all centres	...	39,810	...	52,836
including				
U.K.	...	8,047	...	712
U.S.A.	...	11,166	...	8,068
The Philippines	...	13,132	...	25,078

In the face of the latest sales report, I value the various growths as under:—

Trinidads, up to 130s. if not 131s. for export and 127s. or 128s. for home use.

Grenadas and *O.W.I.* are doubtful, since some *Jamaicas*, possibly in "second hands" were valued at 130s. and 128s. bid refused, fine *Grenadas* and *St. Lucias* must be put on the same level and the cheaper qualities *pro rata*. None have been sold lately so as to enable us to give exact rates.

Accra kinds have been firm to higher say up to 104s. for the best marks for export. During September our exports of powder were heavy. As Messrs. Theo. Vasmer and Co. remind us in their last circular, although only 50 per cent. of the raw cocoa landed in the U.K. can be re-exported, there is nothing at present to prevent the whole of what is ground over here from being turned into powder and exported also. Perhaps it is the possibility of so big a demand striking us, in the near future, that has caused someone to lay up so huge an invisible stock in the U.K. For home use up to 94s. has been paid.

Guayaquils have been selling up to 142s. for *Arriba*.

Cameroons have sold in big parcels at 110s. to 111s. 6d.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

Tropical Life:

A Monthly Journal devoted to the Interests of those living, trading, holding property, or otherwise interested in Tropical and Sub-Tropical Countries.

VOL. XV.—No. 12.]

DECEMBER, 1919.

ANNUAL SUBS., 10/- } POST FREE.
SINGLE COPIES, 1/- }

THE J. P. DEVINE CO.

MANUFACTURERS OF

VACUUM DRYERS.

PASSBURG SYSTEM.

OVER 5,000 IN SUCCESSFUL OPERATION.

ADVANTAGES—

Rapid Drying at Low Temperature.
Simple, Clean & Economic Working.
Small Space Occupied.
Independence of Climatic Conditions.

SPECIALITY—QUICK DELIVERY.

SEVERAL CHAMBERS ALWAYS IN STOCK

Many Repeat Orders from Plantations.

Full particulars from

JAMES LIVINGSTON, Ltd.,

DRYING EXPERTS

Sardinia House, Kingsway, London, W.C. 2.

Telegrams and Cables:

"CINERARY, LONDON."

Telephone:

LONDON WALL 3151.

CONTENTS.

	PAGE
The High Price of Sugar	185
Cacao Production—Flowers, Fruit and Failures	186
Castor Oil Production.—No. IV. N. S. Wales and Queens- land	188
Coffee Planting for Profit.—No. XXV.	189
Brown Bast Disease of Hevea and its Cause.—Part I. ...	190
"Tropical Life" Friend.—No. 174	192
Native Labour—its Care and its Castigation	193
The Road and Transport Exhibition	194
Endurance of the Australian Horse	195
Economic Zoology.—Sir Harry Johnstone on Wild-life Reserves	195
Coconut Possibilities in Angola	196
Trade, Politics and Finance	196
The London Cocoa Market	197

The High Price of Sugar.

SUGAR-CANE PRODUCTION IN INDIA.

Dr. C. A. Barber v. Mr. Subba Ayyar, M.A.

DR. C. A. BARBER, the Indian Sugar Expert, may wish to claim "that India does not produce sugar," but he surely cannot deny that India can and does produce wonderfully fine sugar-cane, and after all it is the cane that we want. Let us have plenty of good cane with a big yield of juice, and we will undertake that whether the Indian Government sugar expert (this term, by the way, must be a misnomer if India does not produce sugar) calls sugar by any other name or not, sugar as produced outside of India could be, and would be, produced in large quantities in India itself. If this can be, why write to the *Times* and to the *Confectionery Journal*, and perhaps to other papers, and tell the man-in-the-street that "the fact that India does not produce sugar would come as a surprise to such a reader, i.e., the ordinary reader." This, the *Confectionery Journal* says, is hair-splitting with a vengeance, unless it is a joke, for of course the ordinary reader and everyone else with whom we have discussed Dr. Barber's article (see the *Times Trade Supplement* of August 30th) are more than surprised to be told such a tale. "Sugar or no sugar," retorted one man, "India can produce sugar-cane, and that's good enough for me."

We are reminded of these little conversations by another excellent article in the *Mysore Economic Journal* on The Sugar-cane Industry. This time we are shown the canes growing, firstly the Red Mauritius Cane in the Southern Arcot District of the Madras Presidency, and then, further on, another full-page illustration of "Thick Cane." The article by Subba Ayyar, M.A., L.T., is, we note (not on sugar production, but) on "The Sugar-cane Industry," and the author tells us: "The constantly increasing consumption of sugar in all countries of the world and the complete cessation of the imports of beet-sugar from Germany and Austria have given an impetus to the Indian industry. Therefore, the question is being freely discussed as to whether India can take advantage of the present opportunity and grow sufficient sugar-cane to meet the needs of home consumption, and also become an exporting country as she once was." Exporting of what? Why, of sugar; that is, not sugar-cane. Why, therefore, lead people to believe that India "does not produce sugar" as we claim she can and does?

If India could only obtain two tons of sugar, gur or whatever name is given to the final pro-

duct, instead of one or less than one ton as now,* India could export sugar, judging by the rapid progress made in at least one district with the Red Mauritius cane, until to-day it is impossible to see any tract round the Nellikuppam Factory growing the old (thin, whitish) cane, as then sugar production in India should go ahead, for Mr. Ayyar says: "The ryots are perfectly satisfied with the thick red Mauritius kind. Thus we see that the Indian ryot is not, after all, so hopelessly conservative. He evidently understands his business, and is not slow to give up his traditional ways if only he is satisfied with the results of new experiments." This endorses, and more than endorses, all we urged, and if we can be pulled up and "censored" by Dr. Barber, and told that in face of our claims it is time that authoritative account be given of the possibility of the case," we shall now watch for Dr. Barber to "go for" Mr. Subba Ayyar, as he appears to us to be far more optimistic of India as a sugar producer and even exporter than we were in "The High Price of Sugar." Already two steps up the ladder of success are chronicled, viz., three-roller iron mills have replaced the old wooden mills, whilst step No. 2 is the realization that charges would be reduced, and more sugar obtained if Rs. 12,000 mills (pre-war rate) capable of working 100 acres of cane were generally used. Since this is acknowledged, surely the mills will soon be sent when prices come down, for, as Mr. Subba Ayyar claims, "The ryot is not slow to give up his traditional ways if only he is satisfied with the results of new experiments."

It is, of course, absurd to say India does not produce sugar. The word sugar, as Sir George Watt we feel sure would tell you, comes from the Sanskrit *sarkára*, and that name occurs in the Athervaveda, one of the oldest classics, and it there means white or crystalline sugar. The most general modern derivation from that is *Sarkar* or *Shakar*, the universal name for, and direct origin of, the English word sugar. The word *Khānda* is also very ancient and sugar-candy comes direct from the Indian *Sarkār—Khāndi*, and both in India and England means the same special form of sugar. *Guda* and *Gula* are the classic forms of the word *Gur* and means unrefined sugar. Besides all this we have at the present moment 2½ million acres under sugar-cane, and prior to the arrival of beet-sugar we had nearly twice that acreage of cane. India might supply the world with sugar as it did in the early days of the British imports of sugar. Moreover, we have in India some half a dozen independent sources (materials) of sugar, and palm sugar gives us the words Toddy and Punch. No part of the world is more closely connected with sugar than India. Why therefore say it is a fact that India does not produce sugar, as Dr. Barber claimed in the *Times Supplement* of August 30th (see TROPICAL LIFE for September, p. 146).

Meanwhile we are interested in following the evidence laid before the Indian Sugar Committee, and find it deals with the question entirely along our lines, the only quibble we might wish to raise being that whilst we should be glad to see the area under cane

extended, what is mostly wanted at the moment is to make far better use of the cane already grown. All the same, such evidence as that of Dr. G. Clarke, the Agricultural Chemist in the U.P., should be carefully noted, especially when he tells us that any increase depends on growing more and, if possible, a better quality of cane, at a price which would admit of the profitable manufacture of white sugar. With this we quite agree. In regard to the supply of manures, he considered that the supply of nitrogenous manures must be looked to if intensive cultivation was to be undertaken. De Sornay's book on "Green Manuring" should be much in demand in face of Dr. Clarke's statement that the problem of green manure should be studied with special reference to the sugar-cane. Written by one of the leading authorities in Mauritius, an important sugar producing centre, fairly near to India, the demand for this leading work on the chief "Green Manures"* is likely to be considerably increased.

Mr. James McKenna, the Chairman, was right in telling those present that "The Empire is crying for sugar, . . . if, therefore, India can become, as she was in the past, self-contained as regards sugar, her present large imports might be utilized by other parts of the Empire. It is even possible that in the future she may again become an exporting instead of an importing country." This is what we asked for in our book; it is far more than we hoped to hear from so leading an authority as Mr. McKenna, in face of the discouraging remarks of the sugar expert down south on our efforts to call attention to the very fact that the agricultural adviser to the Government of India has so plainly stated.

Cacao Production.

FLOWERS, FRUIT AND FAILURES.

"REFERRING to the output of cacao per tree and per acre referred to in your August issue, pp. 133-134," wrote Mr. Knapp when forwarding his last letter on Cacao Fermentation, "the point you raised reminds me of a general question that I have always wanted to ask; it is this: Why does not the planter pollinate the flowers on the cacao tree with a brush? It is well known that the average cacao tree bears at least 5,000 flowers, whilst the number of pods obtained is probably not more than forty. Is this simply due to the fact that self-fertilization is difficult in the cacao flower, and that wind and other factors in cross-fertilization are insufficient? I certainly think that experiments ought to be tried to see if by pollinating the cacao pods by hand the yield of mature cacao pods could be materially increased. A tree with 6,000 pods would be a wonderful sight."

It would indeed, but if it had one thousand at a time, or during a crop even, we should imagine that the tree would soon wear itself out and die. We have always taken it that wise Nature, with all her offspring—bird, beast, fish, insect or plant—allows this apparently needless waste of young life in order not to overwork the parent, and also—be it always re-

* See "The High Price of Sugar," price 1s. 3d., post free, p. 8, and elsewhere.

* John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, London, W. 1. Price (if still available) 17s. 6d. post free.

membered—for fear of the food supplies available becoming exhausted.

Herbert Wright in his book on "Cacao," published as far back now as 1907, called attention to the fractional percentage of fruits that reach maturity to the thousands of flowers borne by the cacao trees, i.e., only .2 to .4 of the flowers produce fruit, he tells us on p. 52, and then goes on to say, "An increase of nearly two million flowers per acre in 1905 over 1903 (in Ceylon) was only accompanied by an increase of about five thousand mature fruits per acre . . . approximately one cwt. of cured cacao has been obtained from the fruit arising from one million flowers." This, of course, is in Ceylon, but at all producing centres the waste of potential pods must be immense. With thirty beans—as shipped—to an ounce, we get 53,760 to the cwt., whilst if the number were exactly 50,000, it would, of course, work out at the rate of .2 that Mr. Wright speaks of. As we write, three samples of recently imported cocoa lie on the desk in front of us, and we weighed 4 oz. of each with the following results:—

	Sold at	Gave to 1 lb.	Beans per oz.
La Reunion L. C., Trinidad ...	128s.	120	= 30
Zattewatte, Ceylon ...	185s.	116	= 29
O.D., Jamaica ...	124s.	108	= 27

We do not guarantee the prices to a shilling, but they are near enough to show that each sample was of good quality. The Trinidad one alone had one or two small beans, but the above is enough to show that for easy reckoning you can take 30 beans to the oz., and so 480 to the lb., and 53,760 to the cwt.

The above particulars, of course, are no guide as to the number of flowers per tree or per acre. Going back to Ceylon, Mr. Wright includes a table in which he claims that in 1903, after trouble with disease, the trees gave less than half the number of flowers to what came, two years later, in 1905. Here is his table of average yields:—

In year	Per tree	Per acre of 300 trees	Cured cacao per acre
1903 ...	5,663	1 $\frac{3}{4}$ million	1.18 cwt.
1904 ...	9,553	2 $\frac{4}{5}$ "	2.07 "
1905 ...	12,020	3 $\frac{3}{5}$ "	3.57 "

On our basis of 30 beans to the oz., or 53,760 to the cwt., the 1 $\frac{3}{4}$ million flowers in 1903 gave about 63,500 beans as exported, or about one bean to thirty flowers. The next year gave about 111,280 beans, or one to 26 flowers, whilst 1905 runs around 192,000 beans (to 3,600,000 flowers), or, let us say, one bean to eighteen flowers. Check the figures to see if they have been worked out correctly.

How the above compares with other centres we cannot say, but would be glad to receive reliable returns on the matter. Such data is very useful, but takes a "power" of patience and work to obtain with accuracy, and if not correct it is worse than useless, for, being misleading, it is dangerous.

Van Hall in his book, p. 51, claims that "On full-grown trees (ten years and older) the number of blossoms produced is very great, but only $\frac{1}{4}$ to $\frac{1}{2}$ per cent.—one out of every 200 to 400—develop into fruit."

The number of seeds to the pod vary from forty downwards, but then all are not of use; the beans at the two ends tend to be small or useless for shipping,

so thirty beans to the pod, and probably less, would be the utmost to be relied on. Split van Hall's figures (one pods out of 200 to 400 flowers), and you will then get one with thirty useful beans to 300 flowers, or one bean to ten flowers. Of course, we should not calculate by the bean, but by the pod, as the latter are produced by the flowers, but as everyone knows the beans and but few see the pods growing, we have worked out the comparison on these lines to drive home to every cacao man, that to every bean he sees, ten if not twenty flowers have been produced by the tree, and all but one were wasted.

Can nothing be done to check this waste and so save the trees from wasting their strength needlessly on the one hand, and of enabling the planter to get—in theory—his present output from one-fifth the area and so save much money in costs and expenses? Do more flowers run to waste at some centres or on some estates? Does manuring the trees adequately and continuously, as when a tree is near a house or a rubbish heap, help them not so much to put forth more flowers, but rather to keep those that do come until they mature and produce pods? If so, what radical changes in the practice and system of manuring does the whole question of flowers, fruits and failures open before us? We trust that those on the estates will follow the trail to the end. Think of the cacao tree at Belem (Pará) which we reproduced on the cover of our little book, "The Future of Cacao Planting" (also facing p. 49), and which, as we stated at the time, gave 720 pods yielding 60 lb. dried cacao in one year owing to the tree being near a refuse heap and drain.

Coming right up to date in this matter, we see by a report in the *Trinidad Guardian* that at a recent demonstration at Rivers (Demonstration) Estate in Trinidad, under the guidance of the present Director of Agriculture, Mr. W. G. Freeman, attention was called to the tests undertaken to try and prove the actual yields of pods on various cacao trees.

The tests were carried out by keeping the record of each tree for eight years by means of a metal disc which was attached, and on which was entered the number of pods picked each year. The data showed that the trees could roughly be divided into three classes, viz., heavy, medium and poor bearers. Some trees gave yields as high as 150 to 170 pods per annum. Altogether there were 13,000 trees of which the management knew the exact yield for the past eight years, and this was most useful for the purpose of seed-selection and for obtaining budded plants to replace bad bearers. The records of two trees were returned as having been:—

	Total	Ave.
A. 123 182 186 154 177 161 99 122 =	1,204	150.5
B. 145 172 250 181 185 204 172 199 =	1,508	188

We believe these figures were for the eight years, 1911-1918, and if so, the first year was one of drought.

Commenting on such yields, Mr. Freeman claimed that they disproved the theory held by some that trees which bore heavily one year did not bear heavily the next one. It also showed that care and seed-selection paid on estates. The experiments also extended into the realms of yield under full shade, partial shade, and no shade. These experiments started in 1910. In

1911 there was a severe drought, which was again in evidence in 1912. At the conclusion of the trials the trees were about sixteen years old. Attention was called to the need, in no-shade cultivation, of not pruning the trees too much, as sufficient growth must be left to protect the surface of the soil from the direct rays of the sun.

The no-shade plot—of about 2,000 trees—gave an annual average yield of 3,429 pods per acre (distance not given, but probably 12 ft. by 12 ft., or 302 trees to acre) for the six years 1910-1915, and of 5,343 pods per year per acre for 1916-1918. At forty seeds to the pod, to become the beans of commerce twelve pods are calculated to go to 1 lb. of beans as shipped. We should have thought that 30 beans to the pod would have been nearer the truth, or 16 pods to the lb., but those on the estates can soon check which is most correct.

Against the above return from the no-shade plot, the cocoa on the full-shade plot, on which the trees were eighteen years old, or two years more than those above, gave an annual average yield of 5,841 pods per acre during 1910-1915, and 7,418 pods for 1916-1918. With some trees that were forty years old the full-shade plot gave 8,863 pods to the acre, the no-shade one 9,889 pods, and the partially shaded one 10,222 pods. The latter was increased to 10,523 pods per year during 1916-1918, but on the no-shade and the full-shade plots a setback was chronicled, 94 on the first, and 734 on the second. If all these trees were planted 300 to the acre, such yields are, of course, very small compared with the 150 or 188 pods per acre shown by the selected trees. Even the latter comparatively large returns, however, are but fractional to what would be the case were the number of pods that come to maturity to bear any comparison to the number of flowers borne by the trees.

Castor Oil Production.—No. IV.

(Continued from March issue, p. 37).

PLANTING IN NEW SOUTH WALES AND QUEENSLAND.

ACCORDING to the *Queensland Agricultural Journal* Mr. H. Ross, Chief Inspector of Agriculture, wrote in the *Agricultural Gazette*, New South Wales, on the advantages and disadvantages of the cultivation of the Castor plant as a commercial proposition as follows:—Is Castor Bean production payable? To answer this question it has to be borne in mind that countries in which cheap labour is available are the principal producers; therefore the question of exporting our surplus crop is one which cannot be regarded seriously, and to satisfy the local demand must be the one aim of the would-be producer. The following questions naturally present themselves:—1. What is the demand for castor beans? 2. How many bushels per acre is a fair yield? 3. What is the probable price per bushel? 4. What is the cost of production, including rent of land, seed cultivation, harvesting, and marketing? The answers are: 1. The demand is a limited one; assuming 100,000 gallons to be sufficient for New South Wales requirements, about 3,500 acres under this crop will supply this demand. 2. Not more than 20 bushels per acre can be expected, although yields of 30 and even 40 bushels per acre are recorded from Florida, South Carolina,

Georgia, Texas, and California. The Queensland Department of Agriculture, in the July issue of the *Queensland Agricultural Journal*, states that the average yield is about 20 bushels per acre. 3. The price per bushel can hardly be estimated, in so far that no market has been established in the past for beans in Australia. The War Department of Washington, U.S.A., has let contracts for the supply of beans at 3'50 dollars (approximately 14s.) per bushel of 46lb. This, it must be remembered, is during War time, when an unprecedented demand has set in for castor oil for aeroplanes, and it is not likely that these prices can be maintained.

Quoting from an article in the *Country Gentleman* (U.S.A.) for March, 1918, contributed by E. B. Reid, it is stated that "in recent times prices to farmers have fluctuated widely by localities and years, ranging from 1 to 2 dollars a bushel, with possibly 1 dollar to 1½ dollar about the average." Further evidence is available as to price in an article on castor seed published in the *Bulletin of the Imperial Institute*, 1911. The writer states that specimens were submitted to commercial experts, who valued them as follows:—

		£	s.	d.	
Nos. 1, 3, 4, 6	...	9	17	6	per ton, March, 1909
" 5, 7	...	9	10	0	" " "
" 2,	...	9	0	0	" " "
" 8	...	8	10	0	" " "
" 9	...	13	5	0	" October, 1910

net weight, including bags, delivered free ex ship at Hull, less 2½ per cent. discount. Taking the American and English figures as a guide, we see then that the price in 1909 was somewhere about 4s., and in 1910 in the vicinity of 5s. 4d. per bushel. 4. The cost of production can only be arrived at according to locality; it would be somewhat similar to the cost of producing an acre of maize except that the harvesting is much more expensive. This is accounted for by the fact that the pods do not ripen evenly and the crop has to be gone over several times in order to harvest it. An estimate for producing, harvesting, bagging, and marketing, a 20-bushel crop of castor beans, allowing 10s. per annum for rent, would not be less than £5 per acre.

From the above figures, farmers will be able to draw their own conclusion as to whether this crop can be considered payable. Furthermore, it may be stated that castor oil plants cannot be grown continuously on the same land for any lengthy period, because the crop exhausts the soil rapidly; so much so that some authorities state that it should be grown only once in five or six years on the same land.

In India the castor bean is usually not grown as a pure crop—that is, it is not grown by itself, but is grown as a border to either a cotton or some other crop, being frequently mixed with a cereal or a legume crop.

The castor oil plant has been proclaimed a noxious weed in many shires and municipalities of this State, and before it can be cultivated in these districts, the restriction would have to be removed.

METHODS OF CULTIVATION.

For the benefit of farmers who wish to try this crop the following information regarding cultivation, harvesting, &c., is given:—

Climate.—A tropical or sub-tropical climate is best suited for the production of castor beans, the North Coast being particularly suitable (in New South Wales).

Soil.—A good loamy soil such as is suited for maize-growing is best, although fair results may be obtained from poorer soils. Heavy clay soils, especially those which are wet and sour, are unsuitable.

Sowing.—The seed should be sown in spring when all danger of frost is over, on well prepared land, in hills, 6 or 7 ft. apart in the rows, and from 6 to 8 ft. apart between the rows. Three seeds are planted in each hill and covered to a depth of 2 to 3 in. It is advisable to pour hot (not boiling) water over the seed prior to planting and let them steep for twenty-four hours.

Thinning out.—When the plants are from 6 to 8 in. high the two smaller ones should be removed from each hill, leaving the strongest.

Intertillage.—It is necessary to cultivate between the rows in order to keep down all weed growth. The inter-tillage should be similar to that given to a maize crop.

Pinching back.—If the plants are allowed to grow without check they will frequently attain a height of from 15 to 20 ft., thus making the harvesting of the seed very inconvenient. In order to keep the plants at a convenient height, the main stem should be pinched back.

Experiments are being conducted on the Grafton and Wollongbar Experiment Farms, also in several localities on the North Coast; and until the results from these experiments are to hand, farmers who wish to give this crop a trial are advised to do so only on a very small scale.

PERCENTAGE OF OIL.

The *Bulletin of the Imperial Institute* (1911) gives the result of nine samples submitted for examination:—

No. of sample	Yield of oil	No. of sample	Yield of oil
1	48.0 per cent.	6	48.9 per cent.
2	50.8 "	7	47.6 "
3	49.4 "	8	45.8 "
4	47.8 "	9	48.2 "
5	50.0 "	average 48.5 "	

A sample obtained from Queensland was analysed by the Chemist's Branch of this Department, and Mr. Guthrie reports as follows:—

Husk	...	...	24.63 per cent.
Kernel	...	...	75.37 "

The yield of oil from the kernel was 55.41 per cent. corresponding to a yield of 41.76 per cent. of the whole bean. The oil was obtained by extraction with sulphuric acid.

HARVESTING SEED.

It is here where most of the difficulties in connection with this crop will be encountered. The seed does not all ripen at the same time. When nearly ripe the capsules begin to turn brown, and it is then that the "spikes" should be harvested. If left, seed shoots out of the capsule. The spikes ripen at irregular intervals, necessitating going over the crop several times before the seed is harvested. Cutting the spikes has to be done by hand; immediately they are cut they should be carted to the barn and spread out, preferably on a wooden or a hard-set earthen floor, surrounded by sides about 2 feet high; these sides may consist of either wood or bagging. The hot rays of the sun will greatly accelerate thorough ripening. They will need to be turned over with a fork at least once a day until thoroughly ripe, when the seeds will "pop" out. It is this popping of the seeds which

necessitates the cut spikes being placed either in a shed or on a floor surrounded by an enclosure.

After the seeds are out of the capsules nothing further remains to be done except to separate the seeds from the husks by winnowing. It usually takes from four to six days after cutting before the spikes shed their seed.

Coffee Planting for Profit.—No. XXV.

THE CLIMATOLOGY OF COFFEE—CEYLON.

(Continued from October issue, p. 159.)

(Based on notes supplied by Dr. de Carvalho.)

IN Ceylon the average height at which coffee is grown is 3,000 ft., say from 2,500 to 3,500 ft. Coffee at higher level than this is to be found in India, where a drier atmosphere prevails, and the rainy seasons or wet months are followed by dry spells of cloudless skies accompanied by parching winds. Coffee is found at high altitudes in Travancore, where the atmosphere is colder. In Madras, coffee grows at 6,000 ft., whereas in Ceylon it grows at sea-level, and is protected by thickets of foliage or wind-breaks.

Again quoting Hull, "The favourite and most prolific yielding coffee districts in Ceylon in the years that have gone were, and probably still are, those situated at an elevation ranging from 2,500 to 3,500 ft., although there are coffee estates at all elevations, from about 500 ft. or a little higher, up to over 5,000 ft. up.

Coffee can always bear a considerable warmth of climate, provided that the humidity is also there in proportion; indeed, as already stated, a hot climate will probably produce the heaviest crops, provided it be sufficiently humid." On the other hand, an excess of wet develops diseases, especially the "black bug."

The eastern slope (of Ceylon) seems to be more favourable, whilst the northern slopes are better in Southern India, "since it loses less of its moisture, stored during the monsoon, than the opposite slope exposed to the vertical rays of the sun; it also preserves a more even temperature. Eastern and western slopes are more equal in respect to the influences exerted upon them by the sun, and thus advantageous or the contrary according to their exposure to rainfall and wind" (Lester Arnold).

Towards the Mysore plateau greater heat prevails, and the rainfall fails during a great part of the year. Needless to say, therefore, the effects of such a climate on the coffee grown there are considerable, and the plants soon become exhausted.

Sheltering coffee by means of wind-breaks is of great importance on estates in India. "The south-west winds," says Elliot, speaking of the monsoons in India, "are only fatally injurious on the first barrier of hills which they strike. Farther inland their force is greatly modified, and to such an extent that little injury results from them. For instance, along the whole of the westerly frontier range of the Mysore tableland coffee can hardly be grown at all in face of the south-west monsoon, and eastern aspects are therefore the best. Five miles farther in, however, an eastern aspect, owing to the climate being so much drier and hotter, is one mostly to be avoided, and an

estate with a western aspect may be considered rather more favourable than otherwise."

Coming now to

MADAGASCAR,

in the central districts of this island the coffee plants need ten months for the different stages of their growth. The ground is hilly or wet. In the Emyrne district the average altitude runs from 1,200 to 1,250 metres. The temperature is rather higher than in Tananarive. At over 1,500 metres up coffee growing becomes difficult, as the Ankarata frost is frequent. In the Emyrne district there are two distinct seasons, the hot and rainy season from November to April and the dry season.

During the cool season the air is still wet and droughts are never excessive. The sky is cloudy, and the central districts are often foggy. To these reasons is due, in M. A. Regaud's opinion, the fact that in the rainy season, as well as in the dry season, the growth of the vegetation is always in progress, leaves continuing to appear. Winds do not prevail in the Emyrne, but strong winds and cyclones are very harmful, although the high points of the eastern coast prevent them from reaching the central districts. It seems, therefore, that in Madagascar the western and northern slopes are best for coffee.

Coming to the Yemen districts of Arabia, here coffee grows on the slopes of the hills but not in the plains. The plantations of the Ramed district, which yield the best coffee, are situated in a mountain chain running north and south. Its slopes, east and west, are occupied by coffee trees, so that the plants are not exposed to the sun for more than six to eight hours per day. Fogs, on the other hand, are frequent. In the Hedjaz area similar conditions may be found. During the dry period of the year irrigation is organized with great care, the smallest being utilized to help in the work. The inland districts may be compared to the Egyptian Sudan, and Nadramant highlands to the Abyssinian plateau. South of latitude 16° N. no prayers for rainfall are required. The coast is arid, and the transition between the district of summer rainfall and the desert is scarcely perceptible.

(To be continued.)

The Brown Bast Disease of Hevea and its Cause.—Part I.

WE have been repeatedly "hailed over the coals" because, like other papers, we have not devoted a column or two each month to discussing the much talked-about brown bast disease of rubber and its remedy. We plead guilty to this short-coming, but would claim in mitigation of the offence that it is impossible, or at least unwise, to discuss a remedy when you do not understand what causes the trouble. On this last point we feel we are not isolated as the leading experts seem to differ, and until they are agreed as to the cause we certainly cannot offer to suggest any remedies. Mr. Petch, the Government Entomologist in Ceylon, however, recently delivered an important lecture on the subject.

Over the initials E. V., the *Planters' Chronicle* of Bangalore, published the most exhaustive article in current literature of our type that we have so far noticed. It runs into nine pages, 483-491, but unfortunately we cannot say out of which issue, except that it was a fairly recent one. The concluding paragraphs inform us that the points in Mr. Petch's lecture which seem to be of special interest is that he would appear to argue that over-tapping is not the cause of brown bast, to which may be added the following:—

1. That brown bast is known in Java and Malaya on untapped trees, though rare—1 in 2,000 trees. We had not previously heard of an authenticated case; it was always someone who had been told that so and so said he had seen a case, and so on. It will be remembered this point was brought up at the last R. G. A. Meeting in Cochin.

2. The fact that Mr. Petch claims that resting the trees is no cure, is one in which we feel sure he is at variance with many experienced men, both in Ceylon and Southern India. Anyhow we would like more evidence on this point.

3. That out of five trees he quotes as having got brown bast in the tapping experiments, only one developed nodules though it is more than four years since brown bast appeared and tapping had been continued all the time though the bark had run dry. We have commonly heard it said that, once brown bast appears, the trees always get nodules, and Mr. Petch himself is responsible for the statement that nodules are a secondary feature of brown bast, of which they are a consequence.

The lecture referred to above was one delivered by Mr. Petch, read, if we remember rightly, first at the Committee of Agricultural Experiments and again at a committee meeting of the Ceylon Planters' Association held in July, when Mr. Petch claimed, not for the first time, that the mycologists have not been able to discover in the affected tissues any fungus or bacterium which is capable of reproducing the disease, and consequently the view has been gradually gaining ground that this effect is due to some interference with the normal physiological functions of the tree, or is a response to some condition induced by the treatment to which the tree is subjected. He then explains the system of ascertaining the nature of the various parts of plant structure by staining with various chemicals. The *Planters' Chronicle* of July 12th called attention to the theory put forward by Rands, that the discolouration of bark in brown bast was caused by a gummy secretion. In Bobiloff's (Dr. Bobiloff, the Dutch scientist,) paper when discussing gum discolouration, and wound gum, he says:—"Especially must one watch that the connection of 'gum' and 'wound gum' are not confounded. The brown substance which is found in brown bast trees cannot be a 'gum,' for it does not swell when treated with potash or warm water, nor is it coloured with ruthenian red. One would rather be inclined to suppose that this substance is a 'wound gum,' because of its characteristic in not swelling with hot water or potash. Further, this brown substance gives a red colouration with fuchsin, which is a test for 'wound gum.' On the other hand, one was able to

show that the brown substance answered to none of the tannin reactions which, according to Strasburger, is characteristic of 'wound gum.' One cannot accept with certainty that in brown bast tissues a pure lignin occurs, as Harmsen asserts, although the above-named reactions, which are characteristic for lignin, gave positive results when applied."

Petch says: "The usual micro-chemical test for wood (lignin) is the pink colour produced when a section is treated with phloroglucine and hydrochloric acid. This result, however, is given not only by wood but also by 'wound gum,' a substance which is formed in the cells when the wood of a tree is wounded or otherwise injured. It has been found that, when this test is applied to cortex attacked by brown bast, the brown substance in the intercellular spaces is coloured pink, and hence it is deduced that this substance is 'wound gum,' or has a composition similar to that of 'wound gum.' It may be noted that Bryce found that the altered latex vessels which form the nucleus of a nodule give all the reactions for lignin.

"This does not mean that the cause of brown bast has been discovered. It still remains to be ascertained why this gum-like substance is formed. Nor, if the brown substance is 'wound gum,' does it follow that it is caused by wounding, as 'wound gum' may result from several causes, including the action of fungi. From the foregoing, it has been surmised that brown bast is the result of tapping. Rand writes:— 'It appears therefore that brown bast is an accentuated condition of gum secretion, probably resulting from the response on the part of the tree to the present methods of tapping.' Bobiloff agrees that the disease is physiological. Both these investigators appear to regard it as due to a degeneration of the tissues owing to the removal of latex from the cortex. Rands carried out the following experiment: One hundred trees, free from brown bast, were divided into two groups of fifty each. All were tapped with two cuts on one-third circumference, 50 centimetres (20 inches) apart. One group was tapped daily, and the other group six times a day. At the end of twelve days, forty per cent. of the second group were running dry, and showed the brown substance in the intercellular spaces and in the latex vessels. No trees in the other group were affected. Bobiloff has experimented on different lines. Taking ten trees, he isolated on each an area of cortex, 22 inches long and 11 inches broad, by cutting round it a deep channel extending to the wood. Thus, no latex could flow into the isolated area from the surrounding cortex. Each isolated area was then tapped daily with a single cut, which extended right across it. After one and a half month's tapping, eight cuts were dry, while the yield of the other two was below the average. A microscopical examination of the remaining cortex showed that all the isolated areas were attacked to a greater or less extent by brown bast, five of them severely. Two physiological effects may be considered as the result of tapping, viz., the effect of wounding, which would be expected to be the same on Hevea as on any other tree, and the effect of the removal of the latex, and the subsequent re-filling of the latex tubes. Rands' experiment covers both points, but

perhaps more especially the former, since the rubber content of the latex generally falls with frequent tapping. Bobiloff's experiment would appear to deal chiefly with the second, as the latex must be replaced from the isolated area. In neither case has the yield of rubber been published.

(To be continued.)

ONCE more we welcome, with greater pleasure than usual, the Christmas Number of *Truth*, which, although its contents grow in size and variety, faithfully preserves its old form as a budget of political and topical fun. The principal feature this year is a burlesque report of a great meeting of shareholders in J. Bull and Sons, Ltd., held at the Albert Hall to pass a resolution in favour of Reconstruction. Appropriate speeches on this comprehensive subject—rather cruel parodies, some of them—are attributed to the Prime Minister and his colleagues, Lord Fisher, Mr. Bottomley, Mr. Smillie, and other well-known people. The police and railway strikes, the coal famine and other subjects are illustrated and versified in subsequent pages of the Number, which concludes with three original stories, all good in their way. The artists contributing this year are Roland Hill ("Rip"), Bert Thomas, A. E. Horne, Alfred Leete, and Stanger Pritchard.

The price of this Christmas Number, the largest issued from *Truth* Office as yet, is 1s. 6d., or 1s. 9d. post free to the Tropics and abroad.

"JACK O'JINGLES" would be improved at the New Theatre if it were speeded up, and especially if the intervals were cut down. The public does not like an hour-and-a-half play spun out for two hours or more. The plot is good, so is the cast, but life is short and men are busy. Butterflies go to revues and Victory Balls, leaving the harder workers for the theatres, and these want continuous recreation, not breaks sufficiently long to allow their minds to drift back to their work. A curtain-raiser would be needed. We always like these little *hors d'œuvres* or dramatic cocktails, they whet the appetite for what is coming. I advise those who have not done so to go and see the play. As we have said, the plot and acting are both good, Miss Lilian Braithwaite as Laetitia Dale and Mr. Alfred Paunner as Lord Repington being especially so; a word also for the innkeeper, Mr. Morrice Seaton, there was plenty of "go" in him.

SPEAKING of the ex-German Colonies, Colonel Amery informed Mr. Forrest that it was not intended that German East Africa should be administered as a native reserve and closed to European settlement. With regard to German East Africa, Cameroons and Togoland, the hon. member might rest assured that when the extent and status of the British spheres had been finally settled those spheres would be administered on the lines which had already proved so successful in the British Colonies and Protectorates in tropical Africa. The administration of the former German Colonies in South-West Africa and the Pacific which had been placed under British control was a matter for the Dominions Governments.



"Tropical Life" Friend.—No. 174.

MR. A. W. KNAPP, B.Sc., F.I.C., &c.

Chief Research Chemist to Messrs. Cadbury Bros., Ltd.

THERE is no need to introduce Mr. Knapp to our readers, all know him well by name and many have met him at the meetings of the Society of Chemical Industry and the various Congresses at which "Our Friend" has read papers on the "Fermentation of Cacao," or on the "Extraction, Composition and Utilization of Vegetable and other Oils." Cacao men give Mr. Knapp the credit of knowing much of the scientific and technical side of their industry, whilst vegetable-oil men feel the same in connection with their work; but neither side is aware, as a rule, of what Mr. Knapp knows of both these important industries. We ourselves were as ignorant as most people on the matter until we read what he wrote in the *Analyst* in March, 1913, on "Hardened Oils," and what he told his audience at Birmingham University on December 11th, 1913, on "Gru-Gru Oil," to take but two of many such examples. Of Cacao, of course, there is no need for us to recall all that Mr. Knapp has done in the past or at the present time, or, if so, a glance on his notes on "Fermentation" in our last issue will satisfy anyone of the extent of his research work.

A B.Sc., both of Birmingham and London, a Fellow of the Institute of Chemists and of the Institute of Hygiene, as well as a member of the Society of Public Analysts and of the Society of Chemical Industry, Mr. Knapp has made good use of his time to acquire what the various learned bodies with which he is connected have to teach him. He served under good

masters and so has become fully experienced in his work.

In 1911 Mr. Knapp was working as research chemist with Messrs. Lever Bros., at Port Sunlight, and after that he joined Messrs. Cadbury Bros., Ltd., as their chief research chemist, through which post we have got into touch with each other, and whenever any technical question connected with cacao crops requires explaining, on our side, we generally send a letter up north to "Our Friend." So far these epistles have always come back with full and satisfactory answers, as was the case with those on which we base the notes in former issues on the "Fermentation of Cacao."

In 1913 Mr. Knapp crossed over to the West Indies in order to continue his studies on the trees and flowers, &c., whilst growing, and at the same time to investigate the process of fermentation, with its resultant changes in the beans. Whilst there he also paid attention to the sugar-production industry. To this day he speaks in glowing terms of the kindness shown him on all sides, both in connection with his work, as well as when sight-seeing or attending social functions.

In the paper delivered to the 1914 Congress, when Sir Hugh Clifford was in the chair, much of what Mr. Knapp together with Mr. Booth then told us could well be repeated to-day, especially the following paragraph:* "Probably the most highly appreciated quality is constancy or reliability of quality. Cacao which varies from bag to bag, or from time to time, will get but scant appreciation. Under ideal conditions standard qualities would be put on the market; Criollo, Forastero, Calabacillo, each of these would be fermented separately and the beans graded according to size. Such a procedure would only be practicable where the cacao from several plantations (say, on the Gold Coast) were taken to a central fermenting station. At the present time we are far from this. Indeed, instead of a careful grading of good qualities, there is in practice a mixing of good and bad. Thus cacao which is known to be diseased or unfermented is deliberately mixed with good beans. Such an action affects detrimentally the reputation of all the cacao from that district, and causes the manufacturers to regard the cacao as less desirable."

At present "Our Friend" is writing a semi-popular book on "Cacao," in which he is describing the complete career of the beans, from the pod to the palate.

Besides the articles contributed by him to *TROPICAL LIFE* in 1914, 1915, 1916, 1918 and during this year, Mr. Knapp has published notes elsewhere on "The Application of Science to Cacao Production"; on "The Separation and Uses of Cacao Shells," which interested us greatly; and on "The Estimation of Shell in Cacao Powder, &c.," the latter was written in collaboration with Mr. McLellan, of Messrs. Rowntree, last year.

"Our Friend's" work in connection with oils has been equally important, but space forbids us to say more. Formerly Research Chemist to Messrs. Lever Bros., Ltd., he acquired a thorough knowledge of the scientific side of such work.

* See the *Proceedings of the Third International Congress*, p. 226. Price 10s. net, TROPICAL LIFE Publishing Department.

Business Notices.

1.—The address of TROPICAL LIFE is Messrs. BALE, SONS AND DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All literary communications should be addressed to the Editor, and accompanied by the necessary stamps for their return if not accepted.

3.—All business communications and payments, either for subscriptions or advertisements, should be sent to the Publishers of TROPICAL LIFE. Cheques to be crossed The Union of London and Smiths Bank, Ltd.

4.—The Subscription, which is Ten Shillings per annum, may commence at any time, and is payable in advance. Life Subscription, £5.

5.—The Advertisement Department is at 112, Fenchurch Street, E.C., where all inquiries respecting advertisements, charges, &c., should be addressed c/o the Manager of the Department. At the same time will advertisers kindly note that all copy and blocks for advertisements must be sent to 112, Fenchurch Street, E.C., before the thirteenth of each month, failing which, insertion of same in current month cannot be guaranteed.

6.—The Publishers reserve the right of refusing any advertisement, or the matter or "copy" sent in for any advertisement. They would also be glad if advertisers would refrain from using the "powerful" or extra heavy type that some adopt at times. Doing so renders the paper unsightly, and is unfair to the other advertisers as well as to ourselves. If all used such type, no one would benefit; to allow some to do so and not others, would be unfair.

7.—Changes of address should be promptly notified.

8.—Non-receipt of copies of the Journal should be notified to the Publishers.

9.—The Journal will be issued on or about the twentieth of the month.

The Managing Director and Editor of "Tropical Life" will be pleased to consider the printing and publishing of useful technical works on Tropical Agriculture, Medicine, or other subjects dealing with the development of our Colonies and the Tropics generally, as well as similar books dealing with Russia, Japan and the East, whether the books are to be published in English or other languages.

Tropical Life.

DECEMBER, 1919.

Native Labour—its Care and its Castigation.

Africa—Slave or Free? by J. H. Harris, with a preface by Sir Sydney Olivier, formerly Governor of Jamaica; 242 pp. and 2 pp. index. Price 6s. net in cloth cover. The Student Christian Movement, 32, Russell Square, W.C. 1.

The Future of the Kanaka, by Edward Jacomb, 219 pp. and 2 pp. index. Price 6s. net in cloth cover. P. S. King and Son, Ltd., Orchard House, Great Smith Street, Westminster, S.W. 1.

These two books have appeared at an opportune moment. They have much in common. Both writers have travelled much and speak from first-hand and up-to-date, i.e., quite recent knowledge of what they write about; both want to give the native the utmost pleasure out of life, healthy and useful pleasure that is and, to do this, both realize that a good deal of training, more by example than precept, is needed; above all, those who are to give this training must have a liking for the work and for the pupils.

Taking Mr. Jacomb's book first, he deals very fully with the New Hebrides. Unhappy people, the victims of dual control, whereby they fall to the

ground between two stools. International etiquette—the fear of giving trouble first at headquarters in their own country and then, and worst of all, in the country of the dual authority—must cause the officials, be they French or English, to minimize trouble, to hush-up scandals and for the best of any two officers to pull himself down, unwillingly if not unwittingly, to the level of his co-worker, as otherwise to try and "pull-up" the slacker would only mean to set him (the slack one) to fight, not in the cause of the natives, but to save his own skin. We have, since *Tropical Life* started over fifteen years ago, heard more about the evils of dual control in the New Hebrides, than of anything of a similar nature in connection with native-control, especially if you take into consideration the small size and comparative unimportance of the New Hebrides group.

One point we would like to make in connection with this book (see pp. 206 and elsewhere). If the coloured races of this earth are deserving of censure, of being cleared off this earth, or of being put under bondage for not developing their lands as we, the White Races, claim that they could do and should do if they are to be considered worthy to be a free people, then what of Australia and her policy; her huge continent and sparse population, coupled with her determination at all costs (so far as we can gather) to keep Australia for the Australians and no one else? A blight is over that country; no black-man's land will prosper as it could prosper more slowly than Australia is prospering and will continue to drag so long as her present policy of isolation continues. We do not say the Australians are wrong, we do not say that they are right in insisting on that policy, but we do say most emphatically that if the whole world were run on Australian lines, then it would be the black man, certainly the yellow races, who would have in the end to come and teach us how to live, instead of our teaching them, for then there simply would not be room in this world of white folks, for half the population that at present inhabits it, to obtain land, work and food.

Like Mr. Jacomb, Mr. J. H. Harris has already written another book on the subject he now discusses, in fact he has written three. We have carefully read them all. We have discussed the question of coloured v. white workers, and the ways of each when striving to work out their commercial and political salvation, against the rest of the world (especially in our last book "How to Pay for the War—By Developing the Resources of the Empire") that there is no need to say more. We do hope, however, that this book will be carefully studied, especially by those who do not agree with all Mr. Harris's views. You can learn so much from it.

We learned for instance, and were surprised to know, that France holds sway over a larger area than we do, viz., over 4,000,000 square miles, against 2,800,000, or with South Africa's 473,000 square miles, nearly 3,300,000 for ourselves. Turned into population we control 35,000,000, including 6,000,000 in South Africa, whilst France has 25,000,000. Since this is so, why is it that England (as Mr. Harris reminds us) does not have direct representatives from her colonies and dependencies in the House of Commons, if not in the House of Lords, as France has in her Senate and Chamber of Deputies. If we want

a non-white representative, men of the calibre of the Hon. Prudhomme David of Trinidad, or of Mr. Ajasa and several other leading West Africans who would equal any representative from the Colonies and surpass most of them, whilst the European element would be quite safe in the hands of Sir Henry A. Alcazar, K.C., the Hon. Aucher Warner, K.C., and others. There is no shortage of suitable men, the only item that is missing is the call from this side. What mulls will be saved, what progress made, when Old England sends forth this call to her politicians, as she did to her fighting men. If the men of these outer zones of the Empire can come in and fight for us, who more able to come in and tell us how to develop the resources of their lands and countries in order to help pay for the war, than these leaders of men in our colonies and dependencies. Since this is so—why not invite them to come and let us send out the invitations soon?

The Road and Transport Exhibition.

LOOKING in at the above exhibition at the Agricultural Hall just after our last number went to press, we soon "struck" the "Orwell" electric lorries, and stood calculating how very useful such a vehicle would be in many trade centres where TROPICAL LIFE circulates—that is to say, wherever the presence of roads and absence of "bush" would enable the lorry to go its way. The makers, who are our old friends, Messrs. Ransomes, Sims and Jefferies, Ltd., of Orwell Works, Ipswich, claim that these lorries are cheaper to run, easier to handle, and more reliable in service than other forms of transport. Soundly designed and strongly constructed, they work well and last long.

Messrs. Yates and Co., Ltd., of Aston Manor, Birmingham, showed tools, shovels and implements for repairs and road making that could, with advantage, be sent on a journey round the Tropics on an Orwell lorry. Both town surveyors and estate owners could learn much from such an exhibition, if only to realize what an advance has been made of late years, thanks perhaps to the way in which the utility of our tools and implements has been increased.

Coming to Stand 7B, we were soon busily inspecting the five-ton Robey steam-tipping wagon, with an improved form of loco-type of boiler. As this firm is great on fibre decorticators, we wondered whether this wagon, with its pressed steel frame and the unimpeded view for the driver (an important item on estates), would be suitable for transporting bulky stuff such as sugar-cane, sisal, or other fibre leaves either with or without a trailer. Owing to its specially designed tipping gear, it struck us as being a useful vehicle to bear in mind when the roadways are suitable for its use.

Weighing machines were shown by W. and T. Avery, Ltd., of Birmingham, whose smaller makes should be able to compete with and cut out the American machines that have got such a grip in the cacao, coffee, rice and other stores in many places. Why this English firm has not got that trade has always troubled us. The American makers, it is true, advertise widely; may be that is the cause of their great success.

The North British Rubber Tyres made a great

show, and must consume a vast quantity of rubber in the aggregate. Anyone who knows their works at Castle Mills, Edinburgh, as we do, can realize what a number of tyres, of all descriptions, such a firm turns out week by week. It is rather a pity, though, that so much trouble and expense is taken by them to try and make their tyres last so long. Where would the plantation rubber industry be if all the firms did the same? Dunlop's, who also had a grand show, are no better, some people say they are worse, in this respect of making tyres last so long. In spite of this they still get through "some" rubber in the course of a year, so we must take the rough with the smooth. Perhaps it is as well neither of these firms advertise in our columns, since the increased orders they would then receive from abroad would tend to hamper deliveries to the long-suffering home buyers.

Messrs. John Fowler and Co., Ltd., of Leeds, showed their "Tiger" Tractor, a very useful transporting machine, which is not as well known as it should be we imagine.

A letter just in from Sir Robert Hadfield, regarding the article on the opening page of our November issue, caused us to turn to the stand of Messrs. Hadfield, Ltd., as we know a road or two which badly needs the assistance of such machines as were shown among their exhibits, and these bad roads are not all located in the Tropics. The wheels shown by this firm, from tramways to barrows, were receiving much attention.

Our friends, Messrs. Shannon, Ltd., showed their many appliances for keeping desks tidy and rooms in order, even if a cyclone were raging outside. So long as the houses stand the blow, this firm seem competent to provide against all emergencies. Metal drawers, by the way, are the only safeguard, when close-fitting, against mice, ants and other pests, which have been credited with the consumption of some of the paper money put in circulation in the Tropics. The total disappearance of some of the notes is at times too complete to satisfy us that it is always a mouse or ant, but even then a good drawer and a safe lock comes in very useful.

Messrs. Venesta, Ltd., whom we soon hope to welcome in our pages again, gave one several ideas not generally thought of in their 3-ply and 5-ply boards for covering the walls, even of well-appointed dining and bed rooms, &c., with marked success both for use and ornament. As this firm claims that their plywood sheets defy damp and resist fire, they ought to make their way into many houses we know.

We should imagine that a judicious blend of the product of the Expanded Metal Co., Ltd., of York Street, Westminster, S.W.1., with Venesta lining should come in very useful for tropical and sub-tropical houses, where cheapness, cleanliness and perfect weather-tight houses are needed. Some years ago we studied the use of expanded metal, both in plaster and concrete work, for with our experience of *tapia* buildings we felt this accessory could become very useful. Since then the use of expanded metal has increased in all ways, as those who saw the road-work and reinforced exhibits at this exhibition at once realized. Messrs. Bullivant's, Ltd., the wire-rope makers, and Messrs. Newton Chambers, of "Izall" fame, also had stands which attracted their full share of attention.

Endurance of the Australian Horse.

ONE wonders how many Australian horses are dotted about the world, and how many times the animals have been praised by those owning them. For once however, the prophet is honoured in his own country, but the ordeals must have been great, so that one is glad to notice the "wind-up" of the first paragraph. In all these cases the animals must have been skilfully handled, but even then we would rather have been the riders than the horses although the physical strain for the men must be very great. Who does not know the statue or its reproduction, "The End of the Trail"? There you have the last word in exhaustion in both man and beast. How far had such an Indian and such a horse to go before they were reduced to such a state. Who can say?

Of the endurance, staying power, or what is termed "bottom," of the Australian horse, many instances can be given, the *Queensland Agricultural Journal* for July tells us. A late horse-breeder said that, in 1873, he rode, with a weight of 13 stone, a half-bred Cleveland 95 miles in one day, between the hours of 6 o'clock a.m. and 10 o'clock p.m., with only two breaks of three-quarters of an hour each. Mr. Galvayne, the Australian horse-trainer, mentions having ridden a mare 168 miles in two days; and a Mr. Archie Ferguson, of Wallon, on the Dawson River, Queensland, rode a little horse, named Billy Button, 70 miles between the midnight and daylight of the following morning. Mr. T. S. Collins, of Eton Vale, Queensland, rode a horse, named Bonnie Doon, 104 miles between the hours of 8 a.m. and sundown. Mr. P. Bolger, on a horse named Boomerang, near Rockhampton rode 105 miles between sunrise and sunset. A doctor at Mudgee drove a pair of ponies 120 miles to see a patient in one day. A Mr. Evans, who rode 17 stone, rode, in one day, from a station near Hillstone to Hay, a distance of 111 miles; a Mr. Henry, of Swanhill, had a station 110 miles distant, and frequently drove this distance, with half-bred Clevelands of his own breeding, in one day, returning on the next, thus making a journey of 222 miles in two consecutive days. None of the horses above referred to suffered in the slightest degree from the effects of these long and tedious journeys.

In an article on the *Suffolk Punch* the *Q.A.J.* gives details of their own experience of the remarkable performance of a Queensland-bred horse of that breed which covered a waterless journey of 120 miles with a rest interval of only two hours.

When one considers the rough treatment that some horses receive, travelling day after day a long overland journey from dawn to dark, many nights with no greater refreshment than a whack on the rump with the bridle as they are turned out to grass on land often as bare as your hand, the endurance of many of the Australian horses is simply marvellous.

WE recommend our readers' attention to the two following reviews of the foreign press, published weekly, at Watergate House, Adelphi, W.C.2, price 1s. each—the *Economic Review* discusses finance, commerce, trade development and legislation, whilst the *Political Review* gives in a condensed form a survey of political affairs and attitudes in all countries, judged by comments in their national press. Capt. W. E. Barber is the editor and the Advisory Council is made up of twelve leading men from our midst.

Economic Zoology.

Our motto: "Utilization, not Extermination."

SIR HARRY JOHNSTONE ON WILD-LIFE RESERVES.

IN a very full and instructive review of Mr. F. W. Fitzsimon's book on the "Mammals of East Africa" (The Natural History of South Africa, vols. I and II, Mammals, price 9s. each volume, TROPICAL LIFE Publishing Department) that he contributed to the *London Observer*, Sir Harry Johnstone pleads for wild animal reserves out there very much on the same lines as those outlined by our Editor in the *London Daily News* about sixteen or seventeen years ago, before TROPICAL LIFE had started.

Now that a leading authority has made himself heard on the subject, it is to be hoped that some steps will be taken before it is too late to preserve wild life on the African—most wonderful of all wild-life centres—continent. More than one will probably be needed, as those animals met with in the southern half may not do well up north, but this is a matter for experts to decide.

Some of the animals and birds can probably be utilized for trade purposes and farms established, as with ostriches, to increase their numbers and improve their plumage or fur, as outlined in our letter to the *Observer* and reprinted last month. It seems to us that Sir Harry Johnstone suggests much the same thing, as when he says, "Where any of these beasts clash with human interests, surely in all that vast region between the Zambesi there might be set aside a number of reserves, natural parks, as in America, where the wild fauna might be spared to live out its life for the interest of future generations; be given a chance even, for us to see if this and that species of bird or beast could be domesticated for man's benefit." Birds whose plumage can be utilized for the millinery trade certainly could be reared on reserves or farms in Africa, in India, and Latin America, as could many fur animals, foxes, chinchillas, beaver, opossum, &c.; in fact, most of them. All could be reared on reserves or large farms; land unsuitable probably, for cultivation; to the benefit both of the breeders (ex-soldiers especially) and the trade elsewhere.

Now that the war is over and machines can be shipped by those firms who are sure of their labour and well organized, planters, managers, creepers, merchants, clerks who work hard, as well as workmen and private folks who can take life easy, are all asking for a good make of bicycle to get around on. Those who can afford motors are as regular in their inquiries as anyone, for what is more acceptable at times than a bicycle in cases of emergency, especially in the tropics, for it needs no time to start. Those, wise in their generation, who want a good "bye" should ask our old friends the Birmingham Small Arms Co., Ltd., Small Heath, Birmingham, to send their lists out, or you will do no harm if you order your machine at once. We, once upon a time, built up a machine with B.S.A. fittings, a queer old lumbering machine to start with, but we used it for fifteen years and then could have sold it, merely because of the fittings, for the same figure as those fittings cost us. This is our experience of B.S.A. stuff.

Coconut Possibilities in Angola.

AN unexpected pleasure came to us in the shape of a letter from Mr. C. Kitts, Manager of the Kitts Co., Ltd., which owns and runs the Fazenda Sao Joao de Cazanga, near Loanda, Portuguese West Africa. In this note we are told that, given the chance which it has not received up to now, Angola being an extremely rich country, could do a big trade in catch crops, and especially in soya beans, ground-nuts, &c., in conjunction with coco-nuts.

Many changes, however, must take place before Angola can come into its own. The tools and agricultural implements in use must be modernized, and capital generally should be pumped into the district to return many times larger before long.

The island owned by the company lies between what is known as the Peninsula and the Mainland. It has an area of about 1,000 acres, and given a good supply of suitable labour and seed-nuts of an improved strain, the owners will do well. Both of these, at the moment, are rather difficult to secure, especially the nuts. With patience, however, all these troubles will be overcome, and the company will also wean the natives in the local villages from their belief that crops will grow without attention or cultivation of any sort, although even with their perfunctory methods they do, in comparison, exceedingly well. For one thing, however, it seems likely that with better care and attention the palms could be brought into bearing and then to full maturity at least twelve months before the natives are doing so.

To improve the present strain, however, it is necessary to have considerable quantities of a good quality seed-nut which, at present, seems impossible to secure. The water supply is all right because, although during the past two years there has been but a poor rainy season, the company is lucky enough to have an excellent supply of very pure water both on its island as well as on the peninsula itself. This is a great help.

With all these advantages around it is a marvel at first sight to think that the coco-nut industry has not gone right ahead, for there they have suitable sea breezes, long sandy beaches, with an excellent soil and water supply lying open to the sea. There is only one drawback, and that is the wet blanket which keeps everything back. Those who own the territory seem to have no ability, or even to have no wish to develop it. Labour is plentiful and fairly cheap. It wants training, and does not take to the teaching necessary in a kindly way. At the present rate of exchange it is costing about 30s. a month. Besides the water supply, there exists the cheapest form of communication with and transport direct to the biggest port in the colony for the crops, San Paulo de Loanda being only two hours distance. This city also offers an excellent market for the ground provisions, catch crops, &c. In face of all it will be surprising if things do not go ahead once the world starts generally to develop its resources and extend its trade now that the war is over.

A TEA-PLANTERS' congress will be held in Java early in 1921. Next month we hope to give rather fuller particulars.

Trade, Politics, and Finance.

No one can do aught but regret America's methods of allowing party spite to prevent an honourable consummation of the Great War being brought about. What this escapade will cost everyone—even Germany, the villain of the play—it is impossible to say; but for crass selfishness and a perfect disregard for the well-being of anyone else, this dodge of the Republican bosses "to punish Wilson" has no equal. It certainly will postpone any chance Europe might have had of pulling up their exchange within a reasonable period, and so may perhaps hit back at America; but that country has made so much money out of the misery of Europe, a misery which she is now causing to be indefinitely prolonged, that it will take many hard knocks to make any impression on her. No one can admire the real hard-working, keen American more than we do, for we will always forgive a man, even Hindenburg, many faults if he is a real hard worker, but these party politicians in the United States are beyond the pale. As the *nergo* says, "They get me sick."

Meanwhile France is striving to pull her francs up to a closer parity to our sterling, whilst we are doing the same to get back to the old level of the almighty dollar in America. France, however, has much the hardest furrow to plough; all the same we wish her "the best of luck," especially as she shows no sign of letting Germany shuffle out of her obligations. I hope this country will look to Paris, and not to Washington, when they want a light to show the road to duty and honour.

Meanwhile Germany, very naturally, is more truculent than ever. Austria may or may not be starving—that is her look-out; she failed Germany, so can take the consequences. In spite of this, there seems a steadily increasing tendency on the part of this country to let Germany have a softer time, to open up trade with her, and, of course, to let Germans come here, where we already have too many. Even people in this country must be pardoned if they say that they do not understand the psychology of the get-on-with-the-peace party over here. There are times when it is kindest to be firm; if any nation on this earth ever needed firmness, it is the nations of Central Europe. Why, therefore, treat them in the yea-nay fashion we appear to be doing, so far as we are allowed to know? All this costs money, and England and France will have to foot the bill. It will be a big one, for, as the Brazilian papers remind us, every cent that the £ declines adds £1,600,000 (\$8,000,000) to the British indebtedness. How many cents does the £ stand below par to-day against the American dollar?

There is one consolation in this disagreeable business; leading business men across the Herring Pond seem as incensed as anyone. "The differences between the President and the Senate should be composed without delay," said the leaders of the New York Chamber of Commerce on December 5th, whilst the Chamber adopted a report of the committee, stating:—

"The United States fought to end war, which can be made possible only by the establishment of a 'Council of Free Nations' with such power of moral economic suasion, with such machinery for adjudication of international disputes, as would surely lessen

the probability of war. The Versailles Treaty sought to accomplish these ends. The alarm felt by the whole world of business over the protracted delay is evidenced by the continued wholly unprecedented fall of exchange rates—a fall almost as detrimental for us exporters as for the unfortunate peoples of Europe who are unable to buy from us the food and materials which they sorely need. A separate peace with Germany would not only imperil American business interests, but would be a base abandonment of our Allies and principles.

"We want peace. We want it speedily, but we want an honourable peace. A peace in which we wrap ourselves in robes of isolation and self-interest would be dishonourable."

Until all this is settled Germany will never quiet down and keep her word, and until she does so Austria will continue to starve, and the world generally to go slow and unsteadily.

The daily papers speak up well of those markets in which we are perhaps most interested. This is perhaps more noticeable in the week-end papers, the *Observer* in particular. All seem prepared for the £ sterling to go down to \$3.50, against \$3.68½ at the moment, whilst silver is at 78½d. and the franc at 42.10 (against 43.35½, we believe, as the record), and the rupee above 2s. 4d. The fact that the forward price of rubber (2s. 7½d.) was above the spot price (2s. 7d.) was one point to be pleased over. Another matter for congratulation is the confidence shown in those who, having come home from the East, are telling us how clean and healthy-looking the estates are. "Travellers' tales" on such subjects are generally greeted with silent tolerance or open jeers; this time, however, importance seems to have been attached to the statements made. From all we have heard, such judgments are fully justified. If the estates in foreign countries, other than rubber, were, as a rule, looked after as carefully as ours are, there would be fewer reports of bud-rot disease on coconut lands or of thrips and mosquillo on cacao estates. It should be noted that expert authorities are expressing doubt as to the correctness of published figures as to stocks and movements of raw materials. Is not this a serious matter? Whose figures are being doubted—are they those of our Board of Trade? If so, the sooner confidence is regained the better, otherwise why waste money to compile such reports; nay, more, why issue figures in which those who know most seem to trust the least? Who is to benefit? Not the planters and the consuming public. "The published figures for rubber are far from reliable," we are told; the same also is true with cacao, and then there is sugar. We cannot prove these figures are wrong, but we do know that those who should have perfect confidence in them fail to trust the returns to-day as they did in the past.

There seems plenty of money about. Instead of the stampede that took place in America recently to obtain temporary loans at any cost, 20 to 30 per cent. even, the week-end of December 13th found surplus balances in London being freely offered overnight as low as 2 per cent. Rumours are afloat that the Maypole Company and Lever's will amalgamate. Needless to say that the price of the Maypole Company's shares have risen. The public meanwhile are "kicking" as vigorously against the increasing prices

demanding for the combine's soap as they are against Coats's 2½d. reel of cotton for 7½d.

The produce markets have been quiet but strong with a tendency to become more active and dearer. With sugars, 118s. has been mentioned as having been paid in the "free" market for white crystallized, although market reports speak of 114s. only for Mauritius and Java, against 94s. to 97s. for West Indian crystallized, 89s. for Barbados, and 82s. to 88s. for syrups. Coffee is going strong and has steadily increased in price since the beginning of December.

The receipts at Rio, July 1st to December 11th, amounted to 1,240,000 bags and at Santos 2,784,000, making 4,024,000 in all, against 4,910,000 bags for last year, 8,213,000 in 1917, and 8,379,000 bags in 1916. Total crops, it may be remembered, amounted to 9,152,000 bags for this last (1918-19) season, against 15,095,000 in 1917-18 and 12,113,000 bags in 1916-17. Prices include 138s. to 141s. for Coorg peaberry, 147s. for middling colory Costa Rica, 127s. 6d. good ordinary Vera Paz, and 124s. to 126s. for Santos. Cotton remains very high at 24.98d. (say, 25d.) for fully middling, against 22.34d. for April delivery, down to 19.10d. in September next year. Sisal hemp has been sold up to £41 for East African. White pigs' bristles sold up to 102s. 6d. lb. and black as high as 40s. 6d. Coconut-oil sold at £100 10s. for Ceylon against £104 for Cochin against £97 10s. for crude cotton-oil and £108 for linseed-oil. Rubber is firm and should go higher. Present rates include 2s. 6½d. to 2s. 7d. both for No. 1 Crêpe and standard smoked sheet, against, be it noted, a lower price for Hard Fine, viz., 2s. 6¼d., and 2s. 4¾d. for Soft Fine, with 1s. 7d. for Caucho Ball. The price of copra has also improved, Ceylon is now quoted at £63, but sellers, it is said, refuse to accept this rate. Malabar is quoted £63 10s. and F.M.S. £62 15s. Marseilles quotes a low rate, £60, against £69 to over £70 at Rotterdam and about the same for Antwerp. Palm kernels are worth £39 or a little more.

Copper is worth £102, with a tendency to go higher, to £104 for future delivery. Tin is at £306 or a little more.

The following is a comparison of the principal points in the returns of the Bank of England on December 13th as compared with last year:—

	December 13th.	1919	1918
Bank Bullion	...	£91,659,648	£77,730,466
Reserve of Notes	...	20,165,210	28,099,860
Private Securities	...	77,073,580	95,901,122
Notes in Circulation	...	88,583,615	67,508,130
Rate of Discount	...	6 per cent.	5 per cent.
Price of 2½ % Consols...	...	50½	59½
Price of Bar Silver	...	78½d.	48½d.

The London Cocoa Market.

BY THE EDITOR.

I AM starting with the fixed determination to make this a short report, and am curious to see if I can do so. The shops are well stocked with chocolates (of a kind), and Lyons, at any rate, have a nice assortment of other sweets. Those, therefore, will be able to make merry over the year-end who have the money to pay for what they want. After Christmas we may have to cut our supplies a little, but we have not yet come down to 3 oz. of sugar only per head, as I see the *Louisiana Planter* makes Dr. Prinsen Geerligs to

say. When the railway strike was on we were told not to exceed 6 oz., but our ration is $\frac{1}{2}$ lb., and has been so for a long time. All the same this somewhat liberal allowance tends to pull down what is available for manufacturing purposes, not only here, but everywhere. The shortage of coal, and through that, of electricity, must be taken into account as affecting both sugar and cocoa. Planters, therefore, must look ahead more keenly than ever and watch all these "side lines" as well as the ordinary cocoa reports, for on them will depend the strength of the competition for supplies as they come forward during 1920.

Another thing for the producers of the medium to best grades—West Indian kinds, Guayaquils, Central American, Ceylon, &c.—to take note of is the freedom with which the most democratic growth of cocoa must be overrunning the earth, although where it goes to no one seems able to say. The more that goes forth, the greater the call for more, since even now the one complaint is that the absence of suitable grades is checking business. Is Germany proving the bottomless pit to which all these supplies are finding their way, to be lost to sight like silver in China or India? Truly are times puzzling—the engineers wondering how to overcome the moulders' strike can scarcely be more anxious to know what lies ahead of them than do those in the cocoa industry, whether as buyers or sellers, who want to know where the cocoa from Accra and the West Coast has gone to, in face of the equally big exports from Bahia and San Thomé.

Bahia, for instance, shipped 684,414 bags from January 1st to October 29th, against 433,813 bags last year. Add to these 12,085 bags shipped from Rio (against 50,350 last year) makes a combined shipment of 696,499 bags, against 484,163 during the same forty-four and a half weeks. And yet they say pests and inundations reduced their outputs, as when the Association of Cocoa Growers of Bahia claimed that the new half per cent. extra export tax to be levied on cocoa should not be imposed, as the Government had done nothing to repair the enormous damage done by the floods, especially around Belmonte, where the late inundations are said to have partially destroyed over a million trees.

Then we come to the most democratic of the three cheaper growths which are producing on a big scale, viz., Accra kinds. Up till the other day, when I received a note from the acting Comptroller of Customs at Accra, I looked upon 90-100,000 tons in twelve months as being a good year's work for that centre. I was therefore rather taken aback when, classifying the figures, I found that nearly 130,000 tons had been exported in nine months only. The heavy shipments at the beginning of the year, especially in April and May, must be due to old accumulations that were unable to get accommodation in previous vessels.

Gold Coast Exports, January—September, 1919.

	Tons		Tons
January ...	13,588	June ...	9,676
February ...	15,908	July ...	8,495
March ...	15,991	August ...	6,481
April ...	23,287	September ...	6,897
May ...	29,089		
Total ...	97,863	Total ...	31,549
		or, in all	129,412

Now we come to San Thomé, last of these three great brethren. Up to now it has been impossible to

ascertain what this island has shipped, but the other day Messrs. Francisco Mantero, of Lisbon, reported that San Thomé, like Bahia, had shipped nearly 700,000 bags (693,472, to be exact) to date. What the exact date was I cannot say; my letter carried that of November 22nd, but probably it was to the end of October.

Multiply the Gold Coast export by 16 bags to the ton, and call it 130,000 tons, gives you 2,080,000 bags as having been shipped in nine months only. It is coming into the line with Sao Paulo for coffee, but at any rate *this* championship remains with us. Then to this add 1,400,000 bags between San Thomé and Bahia gives you producers elsewhere a total of nearly 3,500,000 bags to compete against, and the year still not completed. Was I not right when I claimed that West Africa should "down" cocoa and take up "oils"? We want more soap. Talk of profiteering! I have just been taking my bath by the help of a magnifying-glass from the art department, as the shilling tablet of (not Lever's) soap, unscented, was so small that I was afraid of losing it, and I purchased this one because the others were more money and more common. For this reason alone, to give me peace in my bath, the Gold Coast should try and cut out Nigeria as an exporter of vegetable oils. If it cannot be palm-oil, let it be coconut or groundnut; anything so long as I can afford a large cake of soap and absence of anxiety during the only time in the day that I shut the door in everyone's face.

I notice that during the week ending November 29th we received 31,000 bags of San Thomé, but only a thousand bags of all other kinds. At the same time I noticed that one boat from the West Indies brought 6,000 bags of all growths from those islands. It will be most welcomed.

Havre during November received and delivered the following:—

	Landed. Bags	Delivered. Bags	Stock. Bags
Nov. 1-15 ...	12,856	34,891	258,584
• „ 16-30 ...	31,901	37,711	252,774
Total ...	44,757	72,602	on Oct. 31, 280,619

Here are details of stocks and values at the end of November:—

Havre's Stock and Prices, November 31st.

	1919 Bags	Value Fcs.	1918 Bags	Value Fcs.
Trinidads ...	22,692	240 to 250	3,005	147 to 153
Accra ...	58,039	190 „ 200	583	132 „ 136
Bahia ...	20,285	215 „ 230	1,681	140 „ 147
Venezuela ...	17,942	245 „ 295	2,437	150 „ 185
Grenada and O.W.I.	4,032	225 „ 245	13	146 „ 150
Guayaquil ...	73,374	230 „ 245	3,173	150 „ 160
Haiti ...	14,413	175 „ 195	787	134 „ 140
Pará ...	11,055	220 „ 225	807	148 „ 155
San Domingo	3,425	210 „ 220	387	136 „ 142
San Thomé ...	24,261	220 „ 230	—	144 „ 147
Other kinds ...	3,256	—	109	—
Totals	252,774 bags		12,982 bags	

The above rates are more or less nominal because spot business is mostly of a nominal character. Planters and shippers to France, or anywhere else in Europe, however, must not go blindly by francs nor by £ or marks. They must contract the habit of taking the current rate of exchange, and then of "thinking" out prices in their own currency, as otherwise they

may go on the old-time idea that fcs. 150 = £120 or \$28 80 c., and only realize that they do nothing of the sort when it is too late to save the lost. Perhaps I can drive this lesson home with more emphasis if I quote the following table out of the money market of the *Observer* at my elbow:—

On December 6th \$1 was worth 5s. 2d., not 4s. 1½d., and yet in face of our lower value,

Franco	(French)	was worth	5¾d.	not	9¾d.
Franco, but	(Swiss)	" "	11½d.	"	9¾d.
Franco	(Belgian)	" "	6½d.	"	9¾d.
Florin	(Dutch)	" "	2s. 0d.	" 1s.	8d.
Mark	(German)	" "	1½d.	" 1s.	0d.
Lira	(Italian)	" "	4¾d.	"	9¾d.
Peseta	(Spanish)	" "	1s. 0d.	"	9¾d.
Krone	(Sweden)	" "	1s. 2½d.	" 1s.	1½d.
	(Denmark)	" "	11½d.	" 1s.	1½d.
	(Norway)	" "	1s. 1d.	" 1s.	1½d.
Milreis	(Brazil)	" "	1s. 5½d.	" 1s.	4d.
Dollar	(Argentina)	" "	5s. 1d.	" 3s.	11½d.

The Norwegian, and especially the Danish exchanges are therefore the only ones in our favour. I do not think that the United Kingdom would have been at so noticeable a discount, were it not that we have had to "finance" the heavy imports by France, Belgium and Italy. With France alone £575,000,000 of imports had to be financed in this way during only the first eight months of the year, and then there is Italy and Belgium. I cannot pretend to know anything of all these disorganized markets and the consequent effects on their exchanges, but I am quite sure that they must be carefully studied and taken into consideration by producers and shippers if they want to make sure of their profits.

Coming now to the London stocks, these on December 13th were:—

	1919	1918	1917	1916
London Stock, December 15th—	Bags	Bags	Bags	Bags
Trinidads ...	27,157	22,088	18,516	17,541
Grenadas ...	15,157	7,090	17,259	13,401
Other W.I. ...	5,201	1,516	10,518	21,841
British W. African ...	19,335	19,064	58,244	40,478
Portuguese African ...	26,102	35,545	10,050	27,433
Cameroons ...	2,492	1,319	6,936	5,733
Ceylon and Java ...	7,437	8,488	31,552	23,728
Guayaquils ...	8,496	17,173	54,155	41,037
Bahia and Brazil ...	2,581	1,430	4,988	13,682
Other foreign ...	9,845	4,696	7,478	10,000
Totals ...	123,803	118,409	219,696	214,874

The Board of Trade returns to the end of November show the following:—

Raw Cocoa Movements in the U.K.—

	Landed. Tons.	Del'd H.C. Tons.	Exported. Tons.	Stock, Nov. 30th Tons.
Jan.-Nov., 1917—	56,976	45,774	4,835	49,100
" 1918—	31,926	56,433	584	18,150
" 1919—	109,266	58,089	23,379	51,700
Incr. 77,340	Incr. 1,656	Incr. 22,795	Incr. 33,550	

Add our deliveries to home consumption and exports together, and you will find that we have delivered 81,468 tons in the eleven months, against 57,017 tons last year, and 50,609 tons in 1917, so that we are a much better market than we were. If we can only improve the quality of our imports for home use and leave the bulk of the Accras for the Continent there will be nothing but congratulations to offer.

Of our imports, 70,160 tons came from West Africa, against 9,249 tons from Ecuador, and 12,500 from the

West Indies. Of our exports of the manufactured article, 2,340 tons went to Switzerland, 450 to Holland, and 4,950 tons to "other countries." On the other hand, our exports of raw cocoa included 13,664 tons to Holland and 6,000 tons to other countries.

Discussing the need of improving the make of chocolate offered for sale in the U.K., I notice that the first number of the Spanish section of the Trade Supplement of the *Times* has made its appearance, and a very good number too. It starts with the agricultural matters, and the first article in that section is the one on Criollo Cocoa, referred to last month. Published in Spanish and in so authoritative a medium, the appeal to save this beautiful cocoa for future generations to enjoy should do some good. Before the war most people were sceptical as to the need of having agricultural colleges in the British Tropics; to-day it seems as if we shall have these much-needed institutions. In the same way, therefore, let us hope, since the unlikely seems likely to happen in the one case, that it will become a fact in another, and before it is too late, that the leading American and English, if not European, manufacturers will join hands not only to save Criollo cocoa from dying out, but also to considerably increase the output. Our best thanks are due to the *Times* for having included this article on the subject. As their leading article says: "The true conception of commerce is exchange. If we are to sell, we must buy." How can we buy, however, if crops are allowed to die out? Here, therefore, is another most important reason for bringing about a renaissance in the production and consumption of choice Criollo cocoa and chocolate, viz., to maintain an important medium for trade between Latin-America and ourselves.

Bahia has sent a shipment of cocoa, 2,500 bags, direct to Hamburg. Does this mean that others are to follow? Meanwhile France must be having a bad time between the low value of the franc (after touching fcs. 43, it fell to fcs. 41 on December 12th, when silver stood at 78½d. per oz. and the rupee had reached to over 2s. 4d.), the trouble of adjusting herself, when the demand for goods is so pressing, to her new eight-hour day, the scarcity of sugar and the absence of coal. Germany's inability to continue buying was also disturbing the French and other markets, including our own. Meanwhile Bahia (and probably San Thomé also) must have had a very good year, with heavy shipments and the exchange constantly rising in her favour. For the ten months, January-October, inclusive; Bahia exported 711,865 bags against 433,813 last year, and Rio 12,585 bags against 50,350 bags in 1918.

Writing on November 26th, Messrs. W. R. Grace and Co. reported that the New York market had been very dull without support from the makers in any way. Rumours were afloat of certain short interests in Bahia and this put some stamina into the market, but did not prevent Bahias in the end from going flabby and tending to decline. Exchange also was playing its part. It sent Accras down with a run—to 18½c., whilst manufacturers were offering 17½c. Trinidads were also lower, thanks to the successful "talk-up" of big crops after Christmas. One cannot help wondering how prices would have gone for cocoa in America if the strike of the longshoremen had con-

tinued. Its termination just before December 12th brought another 200,000 bags from the boats on to the market at once; naturally, down went prices.

Planters, however, must watch the sugar situation everywhere as a guide, one of many, as to how demand will go throughout 1920. The world is getting tired of being pinched for sugar, and the first and most successful strike against the poverty of sugar supplies is in the homes. This is causing the homes to be kept going whatever and whoever has to go without. This can only lead to an increasing curtailment of supplies for manufacturing purposes, and it is here where the shoe will pinch the planters—and pinch badly. Remember that over-optimists are even more dangerous than over-pessimists, as when the former tell you that we are all right for sugar, being less than 300,000 tons behind last crop, instead of a million tons behind as we were last year. This is quite true, but “chew” the statement and you will get the flavour, which is rather a nasty one. If we are 300,000 tons behind the last world sugar output, we must be, and we are, nearly 1,300,000 tons behind 1917-18, and that year was nothing to be hilarious over. Cocoa planters, therefore, must move warily and not expect too much. The public will not pay fancy prices for common chocolate, and even common chocolates to sell at fancy prices must have sugar. Keep your eyes, therefore, fixed on the sugar output; your ears will do quite well to listen for cocoa movements and prices.

Coming back home, prices on December 16th, after the sales on that date, ruled as under:—

Trinidads are now valued up to 132s. for superior, against 128s. to 130s. for good middling to good red, and 125s. to 127s. for middling to good fair middling. In each case 1s. to 2s. premium was probably added for export orders but not always. I have not actually heard of any sales above 130s.

Grenadas, on the other hand, have been sold up to 130s., but most people are inclined to value them no higher than 128s. for the top price, with good fair to good red at 122s. to 125s.

St. Lucias have been sold up to 128s., so must be placed alongside *Grenadas* as to values.

Jamaicas would sell well for the best marks, as good red, rather small beans, went at 125s.

British West African have been selling up to 102s. up at Liverpool (equal to 104s. in London) for export and 98s. or 99s. for home trade. Whether the tendency for easier prices in France and America will pull down these rates, and also whether Germany's inability generally to continue buying will weaken markets generally, remains to be seen.

San Thomé has been doing well; against a price like 105s. f.o.b. up to 118s. has been paid in London (112s. for coal stained), and quotations value the best at 121s. or 120s.

Bahias, I would claim, depend to some extent on Accras and the demand for both growths in America, if not over here. At the moment (December 13th) London values the best *Bahias* up to 123s. or 124s.

Ceylons, *Javas* and other choice growths would sell at high rates, being scarce, almost invisible; all the same nothing seems to attract them to London.

Guayaquils have run up to 154s. for *Arriba*, against perhaps 145s. to 147s. for *Machala* and *Caraquez*.

Nitrolim

SPECIAL NOTICE!

NITROLIM

IS NOW

AVAILABLE

FOR EXPORT

in Moderate Quantities

19 per cent. NITROGEN

EQUIVALENT TO

23 per cent. Ammonia

30 per cent. Free Lime

FOR FURTHER PARTICULARS apply to—

NITROGEN FERTILISERS Ltd.,

Winchester House,

OLD BROAD STREET, LONDON, E.C. 2.

